From:	Selim <Selim@sawayaeng.com>
Sent time:	03/04/2019 12:54:44 PM
To:	So Kim; Ron Dragoo
Cc:	Jill Martin <jmartin@trumpnational.com>
Subject:	SUSMP Report - Tract 50666
Attachments:	2019-02-25 Susmp Report.pdf

Hi So, and Ron,

Attached, please find the SUSMP (Water Quality Management Plan) report for your review and approval.

Kindly, let me know if you have any questions.

Thank you
Selim Sawaya P.E. / P.L.S.
(626) 715-2320

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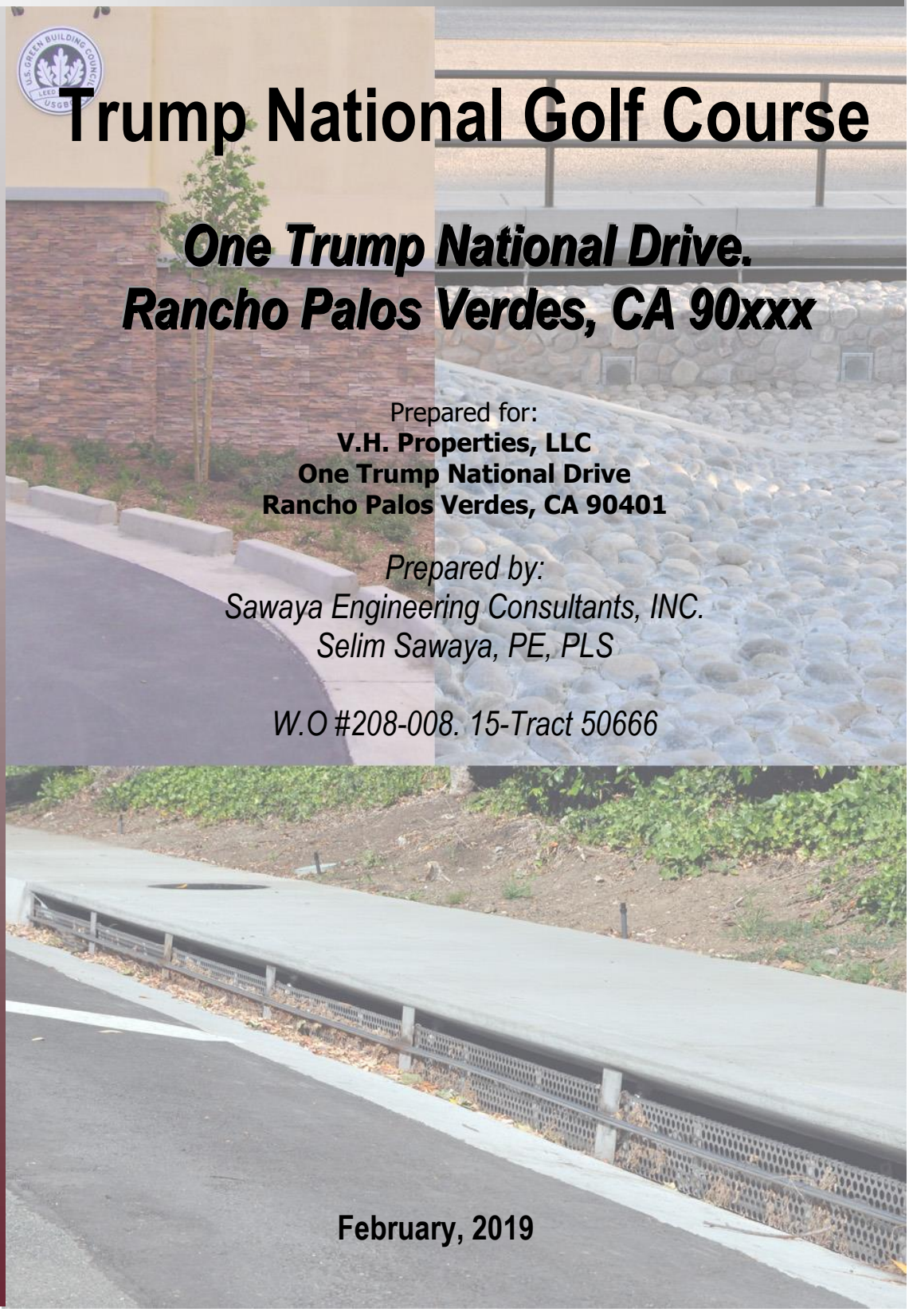
STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP)



Trump National Golf Course

One Trump National Drive.
Rancho Palos Verdes, CA 90xxx

Prepared for:
V.H. Properties, LLC
One Trump National Drive
Rancho Palos Verdes, CA 90401

Prepared by:
Sawaya Engineering Consultants, INC.
Selim Sawaya, PE, PLS

W.O #208-008. 15-Tract 50666

February, 2019

Sawaya Engineering
Consultants, INC.

26950 Ironstone drive
Yorba Linda, CA 92887
626-715-2320

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F. Master Covenants and Agreement

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1. INTRODUCTION

The Standard Urban Stormwater Mitigation Plan (SUSMP) is being prepared to describe the mitigation measures that will be utilized for the site design and development to comply with storm water quality requirements.

The results of this report will determine the required storm water flow to be mitigated according to the Los Angeles County Standard Urban Stormwater Mitigation Plan. This information will be used for the subsequent design of the proposed on-site storm drain system and required drainage improvements.

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2. PROJECT DESCRIPTION

SITE HISTORY / CONDITIONS / EXISTING BEST MANAGEMENT PRACTICE

SITE HISTORY

Vesting Tentative Tract 50666 is located in the City of Rancho Palos Verdes as part of the Trump National Golf Course. The study tributary drainage area is located at the westerly end of Tract 50666, west of Forrestal Canyon (between the Portuguese Bend and Trump National Drive) and includes portion of Palos Verdes Drive South.

Tract 50666 was approved in 1997 to accommodate 39 single family lots and a golf course with no water quality requirements. It was designed and graded in 2000 as originally approved (26 lots).

In 2005, the site of the 26 lots (Lots 14 to 39 located west of Forestall Canyon) was amended, redesigned and graded to accommodate a golf course driving range of approximately 12 acres and 12 single family split level lots of approximately 5 acres that are serviced by a single street access (for a loss of 16 single family lots). The front of the split level lots is graded approximately 8 feet higher than the back portion of the lots.

CONDITIONS

As a Condition of Approval of the Amended Map, water quality measures were imposed on the amended portion of the project in addition to the catch basins located within the right of way of Palos Verdes Drive South fronting the amended site.

The approval of the amended vesting tentative map of tract 50666 in 2005 provided a vested right to proceed with development in substantial compliance with the ordinances, policies, and standards in effect at the time the vesting tentative map is approved.

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EXISTING BEST MANAGEMENT PRACTICES (BMP'S)

A 6 inch diversion pipe is provided at the manhole located at POINT "B" (Attachment "F" – SITE PLAN - TRACT 50666). The 6 inch pipe is connected to the drainage system of Hole No. 10. The flow is then pumped to the Lake at Hole No. 9 via a 4" force main, Lake No. 9 is one of a three lake system that was previously approved and constructed to harvest and reuse water runoff from the golf course.

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3. WATER QUALITY REQUIREMENTS

The primary treatment Control BMPs that will be utilized in conjunction with this project are as follows:

1. All catch basins within the City owned right of way of Palos Verdes Drive south will utilize Connector Pipe Screens as their primary Best Management Practice (CB-1, CB-2, CB-3, CB-10 and CB-11).

2. All catch basins within proposed residential street will utilize bio-treatment devises (CB-5, CB-6, CB-8 and CB-9).

3. All catch basins / inlets located within the back of lots 14 to 23 will utilize a combination of bio treatment devices, Cisterns, etc. to the satisfaction of the City.

4. All catch basins / area drains within City owned parks, open spaces and trails will not utilize any treatment devices (CB-7, CB-12, CB-13 and CB-14)

5. All area drains within the privately owned driving range will not utilize any treatment devices.

6. A secondary treatment control BMP to harvest and reuse would be provided to a portion of the site but will not be considered in the calculation of the BMPs. This will be accomplished by maintaining the 6 inch existing diversion pipe, connecting the manhole at POINT “B” to the drainage system of Hole No. 10. The low flow is then pumped to the Lake at Hole No. 9 via a 4” force main, Lake No. 9 is one of a three lake system that was previously approved and constructed to harvest and reuse water runoff from the golf course.

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4. SITE DESIGN

The 0.75 inch storm will be used to determine the flow and volume to be mitigated.

The Hydrological Design Data are:

1.	Storm Frequency	0.75 inch
2.	Soil type	002
3.	% Impervious used	See Appendix "B"
4.	Flowrates and Volumes	See Appendix "A"

TRUMP NATIONAL GOLF CLUB, LA

0.75 inch Storm

SUBAREA	Catchment	TOTAL ACRES	FLOW TO BE MITIGATED (cfs)	VOLUME TO BE MITIGATED (cuft)
1	CB-1	0.135	0.023	232
2	CB-2	0.368	0.071	825
3	CB-3	0.477	0.095	1069
5 Split	CB-5	2.883	0.073	1334
	CB-6		0.073	1334
6	Back of lots 14-15	0.559	0.082	679
8	CB-8 Total	2.101	0.138	2314
	from East	0.899	0.059	1038
	from West	0.697	0.046	750
	From Slope	0.505	0.033	556
9	CB-9 Total	1.792	0.191	2904
	From East	1.282	0.137	2078
	From West	0.510	0.054	826
10	CB-10	0.979	0.084	1313
11	CB-11	1.182	0.134	1967
15	Back of lots 16-23	1.866	0.274	2265

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5. PROPOSED BEST MANAGEMENT PRACTICES (BMPS)

RIGHT OF WAY OF PALOS VERDES DRIVE SOUTH:

All existing and proposed catch basins that are within the right of way of Palos Verdes Drive South (CB-1, CB-2, CB-3, CB-10, CB-11) will utilize the United Stormwater INC. products such as Connector Pipe Screen which would mitigate 100% of flow or the Curb Inlet DrainPac (See Appendix "D").

PROPOSED LOCAL STREET (COSTA DE LAS ISLAS):

The primary treatment Control BMPs that will be utilized in conjunction with the catch basins located within the right of way of Costa De Las Islas is the Filterra product manufactured by Contech Engineering Solutions LLC.

CB-5 and CB-6 are in flow-by conditions. Filterra unit model FT0606-P (6x6) would be installed upstream of each of CB-5 and CB-6

CB-8 is in sump conditions. One Filterra unit Model FT06504-P (6.5x4)would be installed on the east side of CB-8 and a second Filterra unit model FT060504-P (6.5x4) would be installed on the west side of CB-8.

CB-9 is in sump conditions. One Filterra unit Model FT1006-P (10x6) would be installed on the east side of CB-9 and a second Filterra unit model FT060504-P (6.5x4) would be installed on the west side of CB-9.

BACK OF LOTS 14 TO 23:

Lots 14 to 23 would not be developed / constructed by the applicant. The future owner of the lots will be responsible to provide the necessary BMPs to the satisfaction of the City. Below, is a list of treatment control BMPs that could be used:

1. Cisterns
2. Catch basin Inserts
3. Bio treatment planter
4. Porous hardscaping

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6. STORM WATER QUALITY MAINTENANCE OBLIGATIONS

RIGHT OF WAY OF PALOS VERDES DRIVE SOUTH:

All existing and proposed catch basins equipped with treatment control BMPs that are located within the right of way of Palos Verdes Drive South (CB-1, CB-2, CB-3, CB-10, CB-11) will be maintained by the City of Rancho Palos Verdes.

PROPOSED LOCAL STREET (COSTA DE LAS ISLAS) AND RESIDENTIAL LOTS:

Tract 50666 will be annexed to the existing Homeowner's Association governing Phase I of this development (Tract 50667). The existing governing documents would be amended and restarted to include the 12 lots that are subject to this report.

The HOA will be responsible for all Treatment Control BMPs within Costa De Las Islas. The HOA to subcontract the maintenance of all Filterra units with the manufacturer.

BACK OF LOTS 14 TO 23:

The treatment Control BMPs of the 12 residential lots (Lots 14 to 23) would be privately maintained by the homeowner.

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APPENDIX “A”

Volume and Flowrate calculation
0.75 Storm Event
(HydroCalc)

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VOLUME AND FLOW RATE CALCULATIONS

The 0.75 inch storm will be used to determine the flow and volume to be mitigated.

The Hydrological Design Data are:

1.	Storm Frequency	0.75 inch
2.	Soil type	002
3.	% Impervious used	See appendix B

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TRUMP NATIONAL GOLF CLUB, LA

LID Results for MTD 1472-5
0.75 inch Storm

SUBAREA	Catchment	TOTAL ACRES	FLOW TO BE METIGATED (cfs)	VOLUME TO BE METIGATED (cuft)
1	CB-1	0.135	0.023	232
2	CB-2	0.368	0.071	825
3	CB-3	0.477	0.095	1,069
5 Split	CB-5	2.883	0.073	1,334
	CB-6		0.073	1,334
6	Back of lots 14-15	0.559	0.082	679
8	CB-8	2.101	0.138	2,314
9	CB-9	1.792	0.191	2,904
10	CB-10	0.979	0.084	1,313
11	CB-11	1.182	0.134	1,967
15	Back of lots 16-23	1.866	0.274	2,265

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Peak Flow Hydrologic Analysis

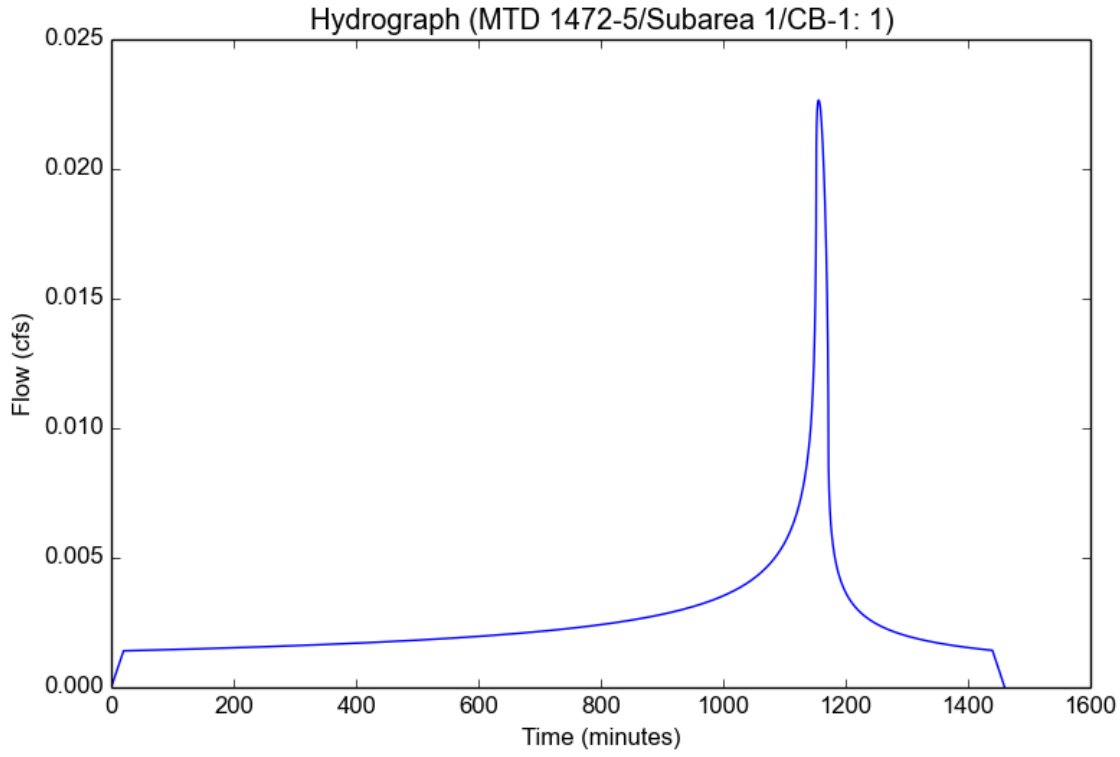
File location: H:/008/208-006/15-2 - Tract 50666/Engr/Studies/Susmp/00- SUSMP Report/02-Volume and Flowrate calcs/C3-Output-File 075 In Storm.pd
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 1/CB-1
Subarea ID	1
Area (ac)	0.135
Flow Path Length (ft)	340.0
Flow Path Slope (vft/hft)	0.038
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.66
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2332
Undeveloped Runoff Coefficient (Cu)	0.3692
Developed Runoff Coefficient (Cd)	0.7195
Time of Concentration (min)	20.0
Clear Peak Flow Rate (cfs)	0.0227
Burned Peak Flow Rate (cfs)	0.0242
24-Hr Clear Runoff Volume (ac-ft)	0.0053
24-Hr Clear Runoff Volume (cu-ft)	231.6979



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Peak Flow Hydrologic Analysis

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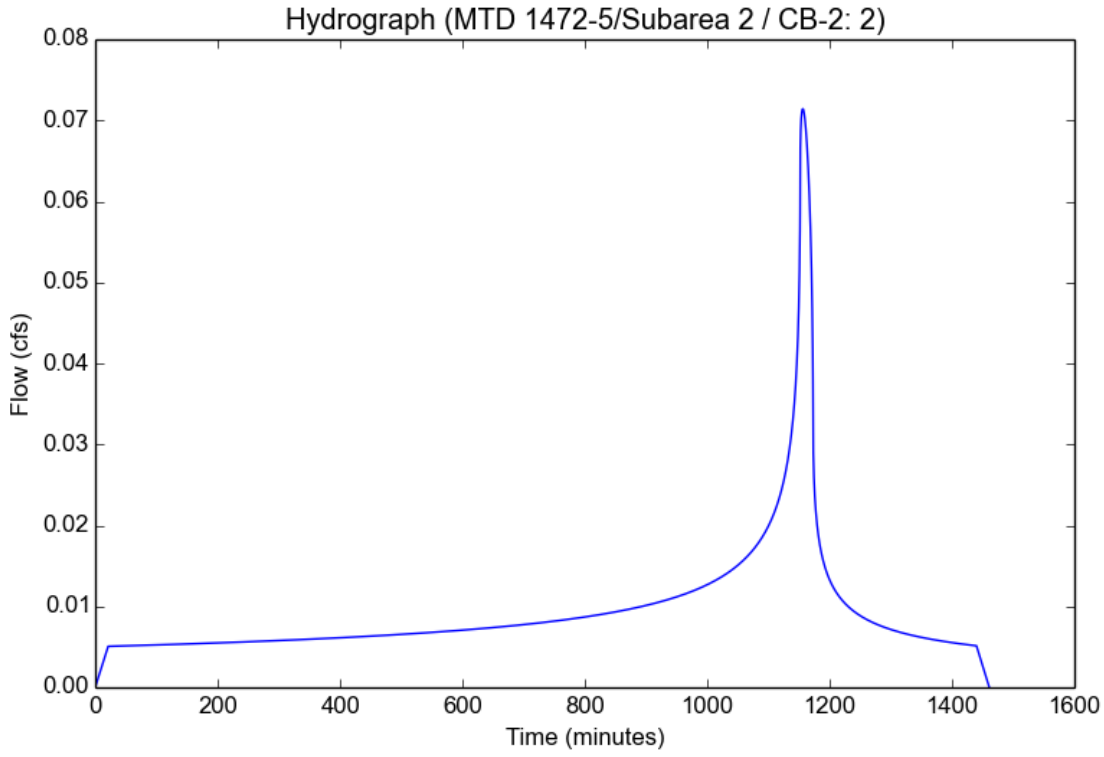
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 2 / CB-2
Subarea ID	2
Area (ac)	0.368
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.041
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2279
Undeveloped Runoff Coefficient (Cu)	0.3613
Developed Runoff Coefficient (Cd)	0.8515
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.0714
Burned Peak Flow Rate (cfs)	0.0736
24-Hr Clear Runoff Volume (ac-ft)	0.0189
24-Hr Clear Runoff Volume (cu-ft)	824.6611



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Peak Flow Hydrologic Analysis

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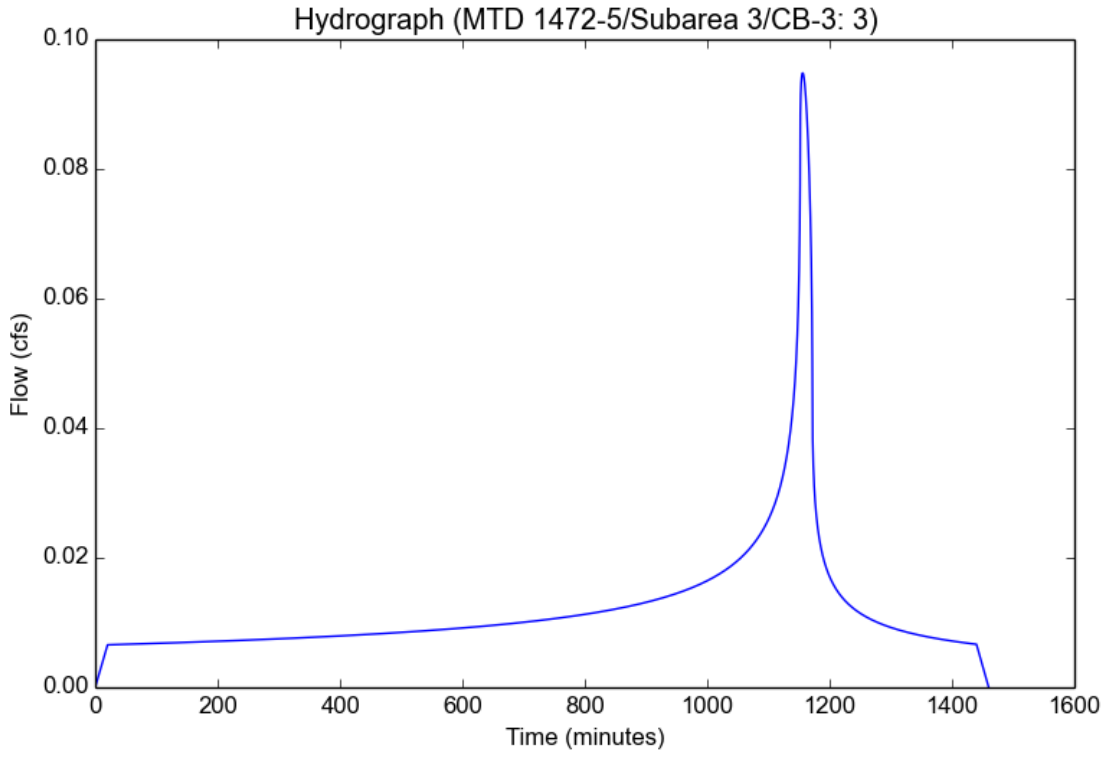
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 3/CB-3
Subarea ID	3
Area (ac)	0.477
Flow Path Length (ft)	425.0
Flow Path Slope (vft/hft)	0.045
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2332
Undeveloped Runoff Coefficient (Cu)	0.3692
Developed Runoff Coefficient (Cd)	0.8522
Time of Concentration (min)	20.0
Clear Peak Flow Rate (cfs)	0.0948
Burned Peak Flow Rate (cfs)	0.0977
24-Hr Clear Runoff Volume (ac-ft)	0.0245
24-Hr Clear Runoff Volume (cu-ft)	1068.9968



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Peak Flow Hydrologic Analysis

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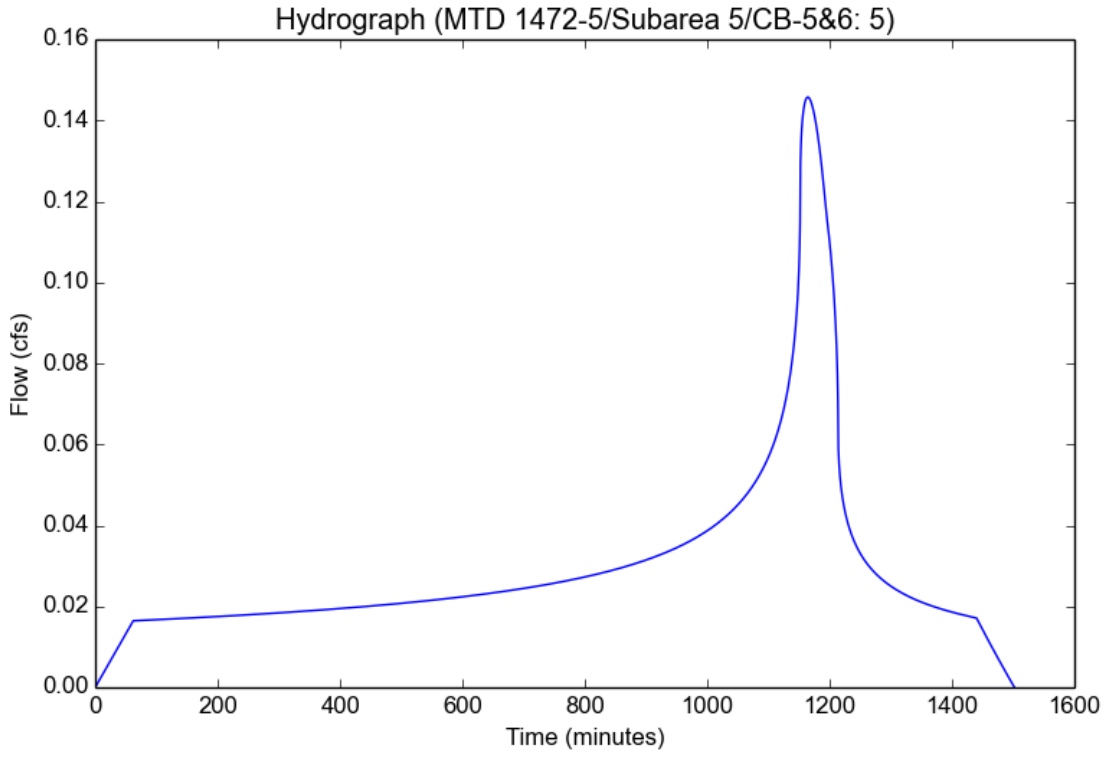
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 5/CB-5&6
Subarea ID	5
Area (ac)	2.883
Flow Path Length (ft)	720.0
Flow Path Slope (vft/hft)	0.014
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.3
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.137
Undeveloped Runoff Coefficient (Cu)	0.1412
Developed Runoff Coefficient (Cd)	0.3689
Time of Concentration (min)	62.0
Clear Peak Flow Rate (cfs)	0.1457
Burned Peak Flow Rate (cfs)	0.1811
24-Hr Clear Runoff Volume (ac-ft)	0.0612
24-Hr Clear Runoff Volume (cu-ft)	2666.814



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Peak Flow Hydrologic Analysis

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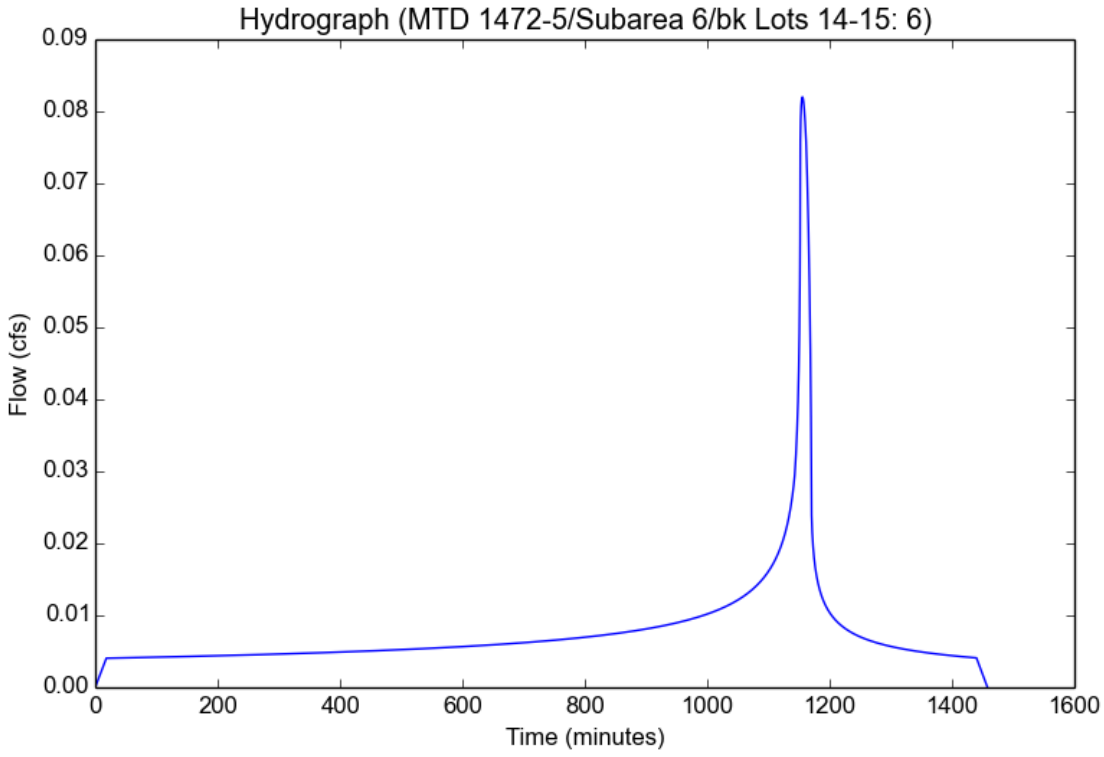
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 6/bk Lots 14-15
Subarea ID	6
Area (ac)	0.559
Flow Path Length (ft)	170.0
Flow Path Slope (vft/hft)	0.012
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2451
Undeveloped Runoff Coefficient (Cu)	0.3802
Developed Runoff Coefficient (Cd)	0.5985
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.082
Burned Peak Flow Rate (cfs)	0.092
24-Hr Clear Runoff Volume (ac-ft)	0.0156
24-Hr Clear Runoff Volume (cu-ft)	678.5311



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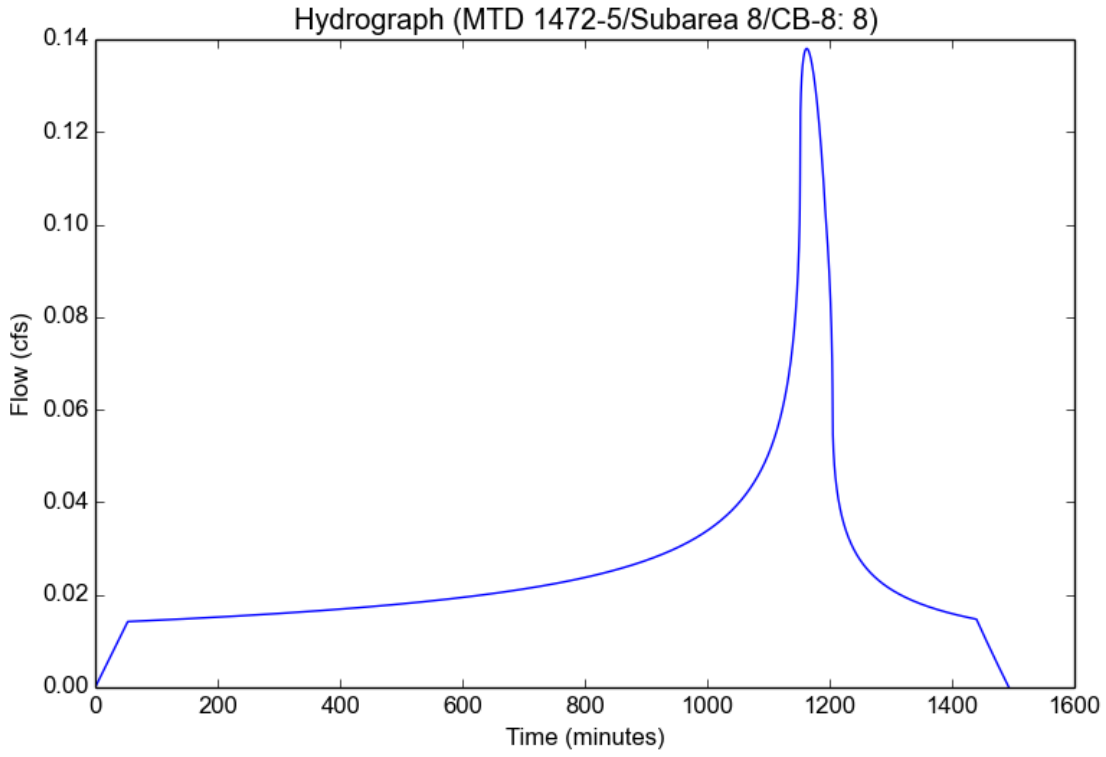
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 8/CB-8
Subarea ID	8
Area (ac)	2.101
Flow Path Length (ft)	820.0
Flow Path Slope (vft/hft)	0.027
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.38
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1475
Undeveloped Runoff Coefficient (Cu)	0.1666
Developed Runoff Coefficient (Cd)	0.4453
Time of Concentration (min)	53.0
Clear Peak Flow Rate (cfs)	0.138
Burned Peak Flow Rate (cfs)	0.1633
24-Hr Clear Runoff Volume (ac-ft)	0.0531
24-Hr Clear Runoff Volume (cu-ft)	2314.2904



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Peak Flow Hydrologic Analysis

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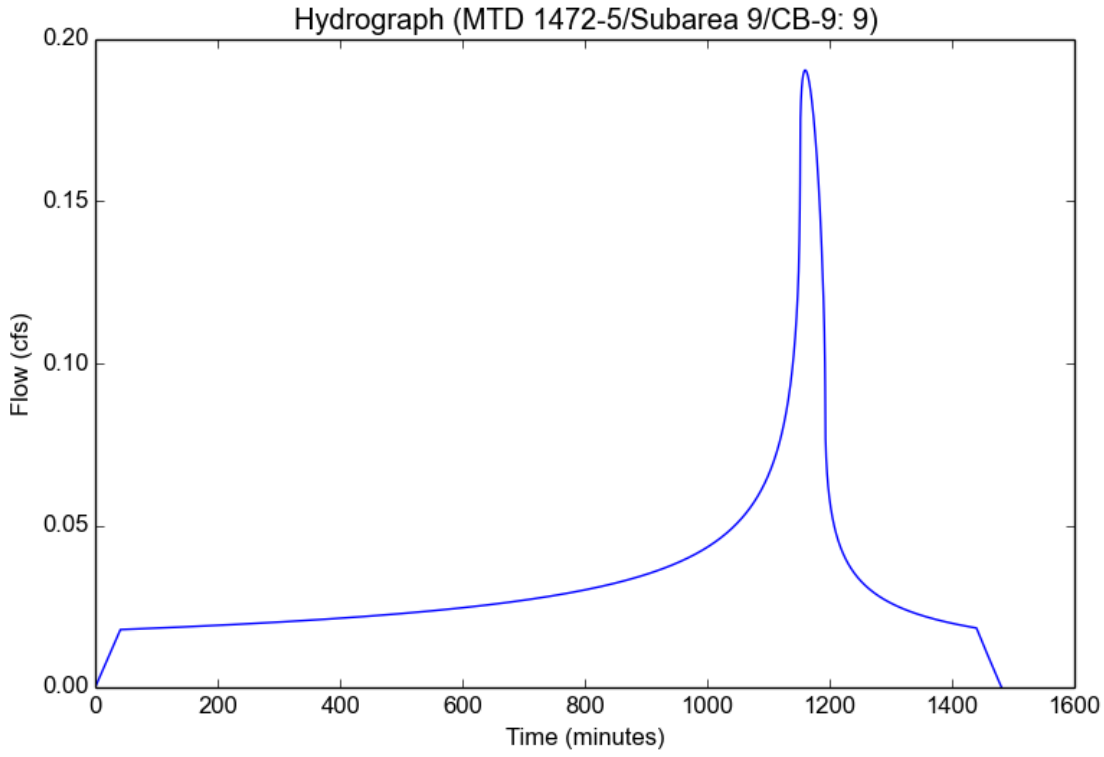
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 9/CB-9
Subarea ID	9
Area (ac)	1.792
Flow Path Length (ft)	820.0
Flow Path Slope (vft/hft)	0.027
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.62
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1664
Undeveloped Runoff Coefficient (Cu)	0.2124
Developed Runoff Coefficient (Cd)	0.6387
Time of Concentration (min)	41.0
Clear Peak Flow Rate (cfs)	0.1905
Burned Peak Flow Rate (cfs)	0.2072
24-Hr Clear Runoff Volume (ac-ft)	0.0667
24-Hr Clear Runoff Volume (cu-ft)	2903.771



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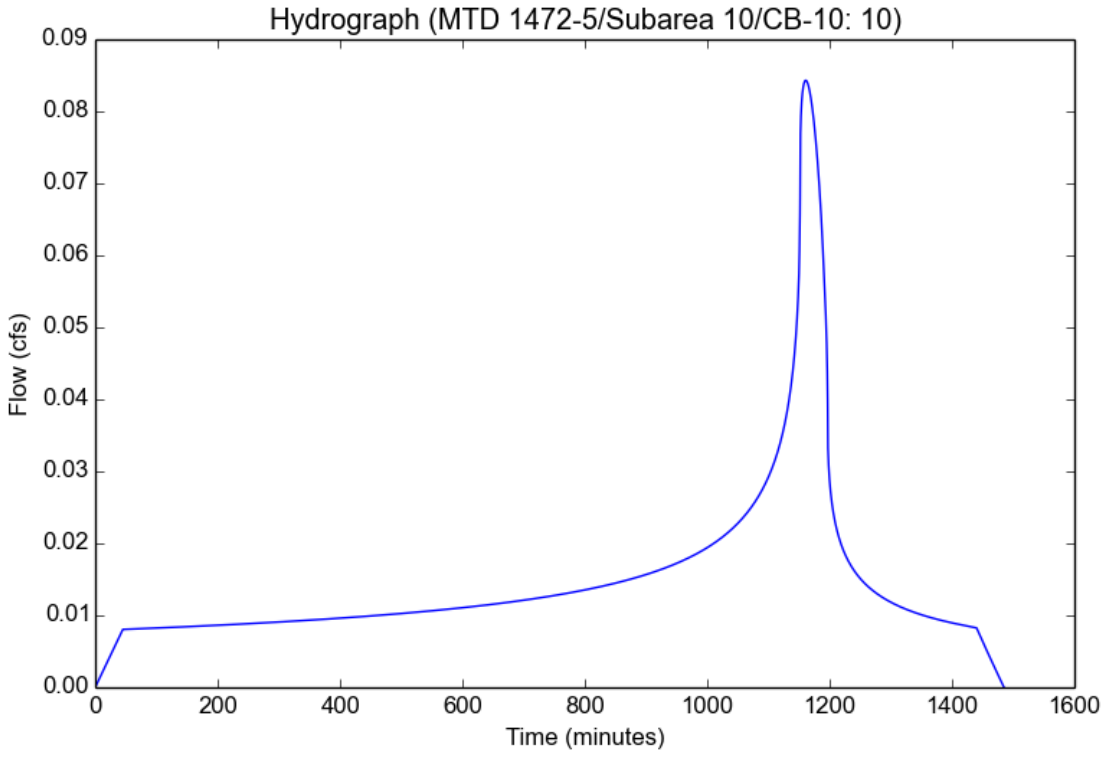
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 10/CB-10
Subarea ID	10
Area (ac)	0.979
Flow Path Length (ft)	850.0
Flow Path Slope (vft/hft)	0.038
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.49
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1593
Undeveloped Runoff Coefficient (Cu)	0.1952
Developed Runoff Coefficient (Cd)	0.5405
Time of Concentration (min)	45.0
Clear Peak Flow Rate (cfs)	0.0843
Burned Peak Flow Rate (cfs)	0.0952
24-Hr Clear Runoff Volume (ac-ft)	0.0301
24-Hr Clear Runoff Volume (cu-ft)	1313.0179



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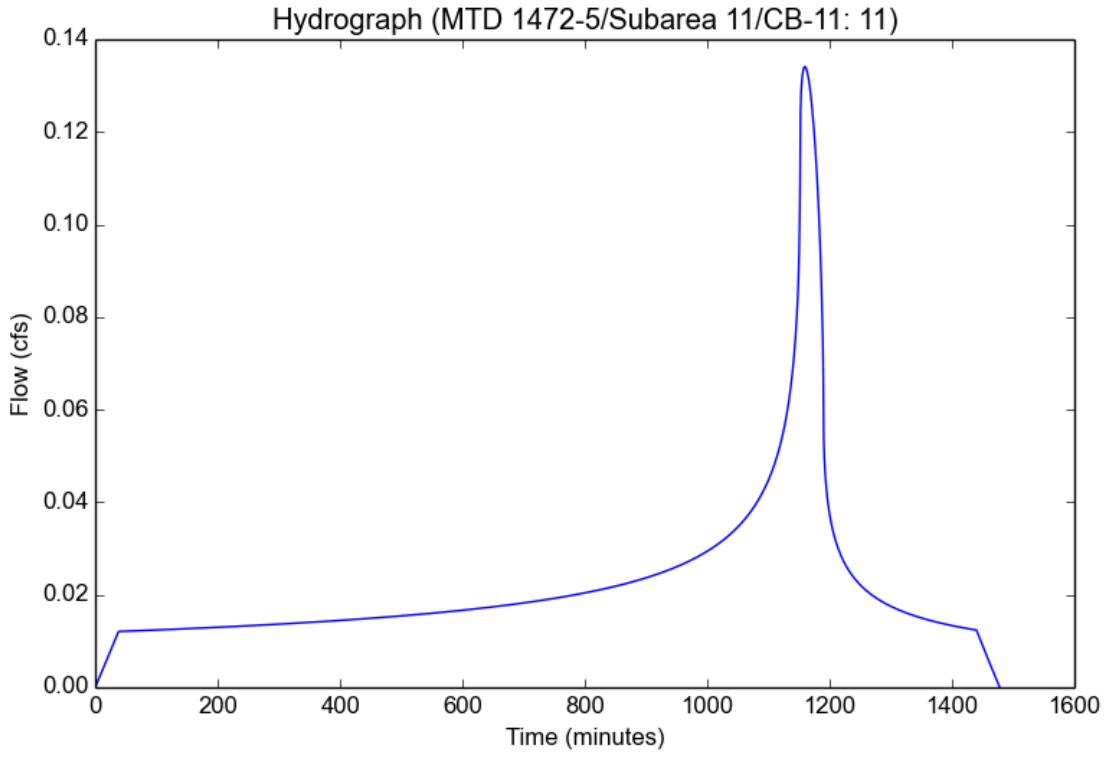
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 11/CB-11
Subarea ID	11
Area (ac)	1.182
Flow Path Length (ft)	825.0
Flow Path Slope (vft/hft)	0.039
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.64
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1725
Undeveloped Runoff Coefficient (Cu)	0.2271
Developed Runoff Coefficient (Cd)	0.6577
Time of Concentration (min)	38.0
Clear Peak Flow Rate (cfs)	0.1341
Burned Peak Flow Rate (cfs)	0.1451
24-Hr Clear Runoff Volume (ac-ft)	0.0452
24-Hr Clear Runoff Volume (cu-ft)	1967.2011



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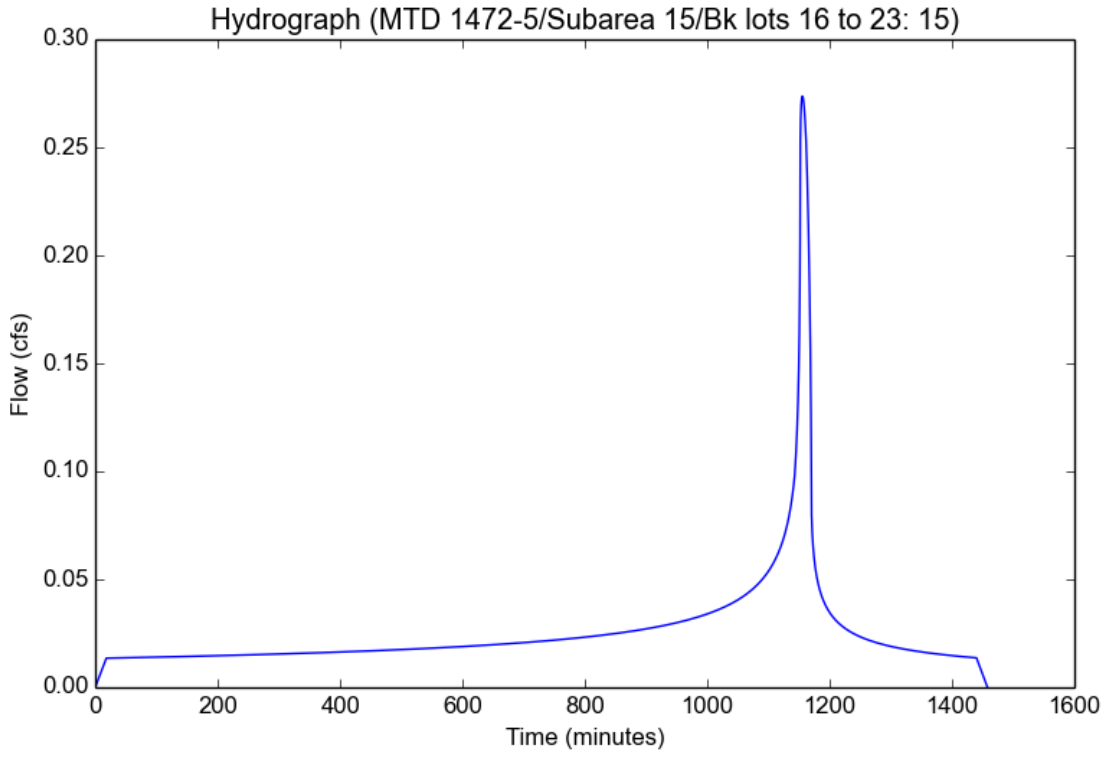
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MTD 1472-5/Subarea 15/Bk lots 16 to 23
Subarea ID	15
Area (ac)	1.866
Flow Path Length (ft)	170.0
Flow Path Slope (vft/hft)	0.012
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	0.75 inch storm
Fire Factor	coastal
LID	True

Output Results

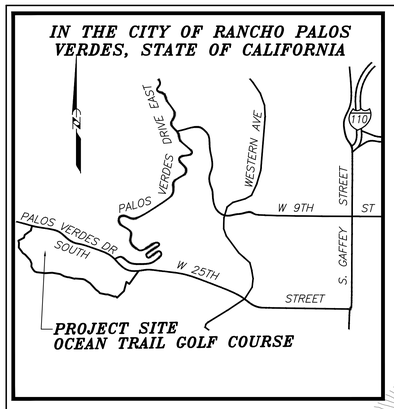
Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2451
Undeveloped Runoff Coefficient (Cu)	0.3802
Developed Runoff Coefficient (Cd)	0.5985
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.2737
Burned Peak Flow Rate (cfs)	0.307
24-Hr Clear Runoff Volume (ac-ft)	0.052
24-Hr Clear Runoff Volume (cu-ft)	2265.0072



2019-02-25 Susmp Report.pdf

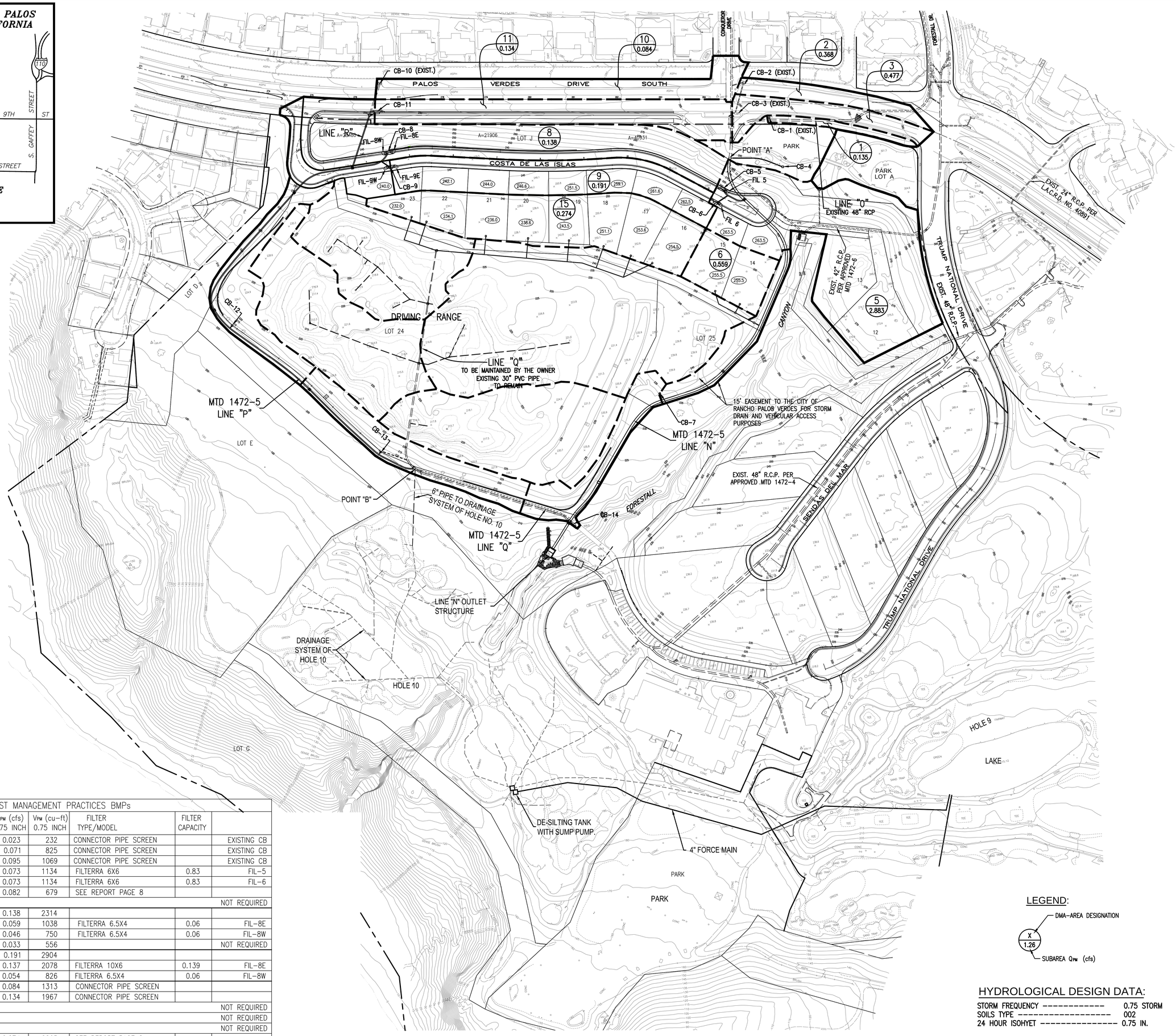
APPENDIX “B”

Standard Urban Storm Water Mitigation Plan
SUSMP Map



VICINITY MAP

THOMAS GUIDE P.853, F-6
NOT TO SCALE



SCALE: 1"=80'

80' 40' 0' 80' 160'

GRAPHIC SCALE

BEST MANAGEMENT PRACTICES BMPs							
SUBAREA	CATCH BASIN	TRIBUTARY AREA (Ac)	Q_{PM} (cfs) 0.75 INCH	V_{PM} (cu-ft) 0.75 INCH	FILTER TYPE/MODEL	FILTER CAPACITY	
1	CB-1	0.135	0.023	232	CONNECTOR PIPE SCREEN		EXISTING CB
2	CB-2	0.368	0.071	825	CONNECTOR PIPE SCREEN		EXISTING CB
3	CB-3	0.477	0.095	1069	CONNECTOR PIPE SCREEN		EXISTING CB
5	SPLIT CB-5	2.883	0.073	1134	FILTERRA 6X6	0.83	FIL-5
	SPLIT CB-6		0.073	1134	FILTERRA 6X6	0.83	FIL-6
6	LOTS 14,15	0.559	0.082	679	SEE REPORT PAGE 8		
7	CB-7						NOT REQUIRED
8	CB-8 (TOTAL)	2.101	0.138	2314			
	FROM EAST	0.899	0.059	1038	FILTERRA 6.5X4	0.06	FIL-8E
	FROM WEST	0.697	0.046	750	FILTERRA 6.5X4	0.06	FIL-8W
	FROM SLOPE	0.505	0.033	556			NOT REQUIRED
9	CB-9 (TOTAL)	1.792	0.191	2904			
	FROM EAST	1.282	0.137	2078	FILTERRA 10X6	0.139	FIL-8E
	FROM WEST	0.510	0.054	826	FILTERRA 6.5X4	0.06	FIL-8W
10	CB-10	0.979	0.084	1313	CONNECTOR PIPE SCREEN		
11	CB-11	1.182	0.134	1967	CONNECTOR PIPE SCREEN		
12	CB-12						NOT REQUIRED
13	CB-13						NOT REQUIRED
14	CB-14						NOT REQUIRED
15	LOTS 16-23	1.866	0.274	2265	SEE REPORT PAGE 8		
16	DRIVING RANGE						NOT REQUIRED
17	DRIVING RANGE						NOT REQUIRED
18	DRIVING RANGE						NOT REQUIRED
19	DRIVING RANGE						NOT REQUIRED

LEGEND:

X = DMA-AREA DESIGNATION
1.26 = SUBAREA Q_{PM} (cfs)

HYDROLOGICAL DESIGN DATA:

STORM FREQUENCY ---------- 0.75 STORM
SOILS TYPE ---------- 002
24 HOUR ISOHYET ---------- 0.75 IN.

NO.	REVISION	REVISED BY	APPROVED BY	DATE

PREPARED BY:
SAWAYA ENGINEERING CONSULTANTS, INC
642 S. PATHFINDER TRAIL, ANAHEIM, CA 92807
(714) 974-6546 Tel (714) 974-6568 Fax
CIVIL ENGINEERING / LAND PLANNING / SURVEYING
CHECKED
DESIGNED
DRAFTED

REGISTERED PROFESSIONAL ENGINEER SELIM RODRIGUE SAWAYA No. 44179 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA

PREPARED FOR:
V H PROPERTY CORP / TRUMP ORGANIZATION
ONE OCEAN TRAILS DRIVE
RANCHO PALOS VERDES, CALIFORNIA 90275
TEL: (310) 345-4501

MTD 1472-5

STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP)

SITE PLAN - TRACT 50666

IN THE CITY OF RANCHO PALOS VERDES

SCALE: | PROJECT NO: 208-006 | DATE: FEBRUARY 2019

SHEET 1 OF 1 SHTS

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APPENDIX “C”

Hydrologic Design Data:
Proportion Impervious Data
(from LACFCD Hydrology Manual)

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COMPOSITE PERCENT IMPERVIOUS

Subarea No.	Catchment	Land Use	% Impervious	Area	Area		Composite		Use % Impervious	
					Impervious	Pervious	% Imper.	% Perv.		
1	CB-1	Hard	100%	3620	3620	0	0.66	0.34	0.66	
		Slopes	10%	2240	224	2016				
2	CB-2	Street							0.91	Use Table
3	CB-3	Street							0.91	Use Table
4	CB-4	Park							10%	Use Table
5	CB-5	Street	91%	8660	7881	779	0.30	0.70	0.3	
	CB-6	Residential	42%	50800	21336	29464				
		Slopes	10%	54635	5464	49172				
6	Back of lots 14-15	Residential							0.42	Use Table
7	CB-7	OS Trails							SUSMP Not required	
8	CB-8	Street	91%	31455	28624	2831	0.38	0.62	0.38	
		Slopes	10%	60095	6010	54086				
9	CB-9	Street	91%	31225	28415	2810	0.62	0.38	0.62	
		Residential	42%	46875	19688	27188				
10	CB-10	Street	91%	20500	18655	1845	0.49	0.51	0.49	
		Median	10%	7555	756	6800				
		Slopes	10%	14600	1460	13140				
11	CB-11	Street	91%	23300	21203	2097	0.64	0.36	0.64	
		Median	10%	5650	565	5085				
		Hard/Soft trails	50%	22625	11313	11313				
12	CB-12	OS Trails							SUSMP Not required	
13	CB-13	OS Trails							SUSMP Not required	
14	CB-14	OS Trails							SUSMP Not required	
15	Back of lots 16-23	Residential							0.42	Use Table
16	Local area drains (privately maintained)	Golf Course							SUSMP Not required	
17		Golf Course								
18		Golf Course								
19		Golf Course								

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Proportion Impervious Data

Code	Land Use Description	% Impervious
1111	High-Density Single Family Residential	42
1112	Low-Density Single Family Residential	21
1121	Mixed Multi-Family Residential	74
1122	Duplexes, Triplexes and 2-or 3-Unit Condominiums and Townhouses	55
1123	Low-Rise Apartments, Condominiums, and Townhouses	86
1124	Medium-Rise Apartments and Condominiums	86
1125	High-Rise Apartments and Condominiums	90
1131	Trailer Parks and Mobile Home Courts, High-Density	91
1132	Mobile Home Courts and Subdivisions, Low-Density	42
1140	Mixed Residential	59
1151	Rural Residential, High-Density	15
1152	Rural Residential, Low-Density	10
1211	Low- and Medium-Rise Major Office Use	91
1212	High-Rise Major Office Use	91
1213	Skyscrapers	91
1221	Regional Shopping Center	95
1222	Retail Centers (Non-Strip With Contiguous Interconnected Off-Street	96
1223	Modern Strip Development	96
1224	Older Strip Development	97
1231	Commercial Storage	90
1232	Commercial Recreation	90
1233	Hotels and Motels	96
1234	Attended Pay Public Parking Facilities	91
1241	Government Offices	91
1242	Police and Sheriff Stations	91
1243	Fire Stations	91
1244	Major Medical Health Care Facilities	74
1245	Religious Facilities	82
1246	Other Public Facilities	91
1247	Non-Attended Public Parking Facilities	91
1251	Correctional Facilities	91
1252	Special Care Facilities	74
1253	Other Special Use Facilities	86
1261	Pre-Schools/Day Care Centers	68
1262	Elementary Schools	82
1263	Junior or Intermediate High Schools	82
1264	Senior High Schools	82
1265	Colleges and Universities	47
1266	Trade Schools and Professional Training Facilities	91
1271	Base (Built-up Area)	65
1271.01	Base High-Density Single Family Residential	42
1271.02	Base Duplexes, Triplexes and 2-or 3-Unit Condominiums and T	55

2019-02-25 Susmp Report.pdf

Code	Land Use Description	% Impervious
1271.03	Base Government Offices	91
1271.04	Base Fire Stations	91
1271.05	Base Non-Attended Public Parking Facilities	91
1271.06	Base Air Field	45
1271.07	Base Petroleum Refining and Processing	91
1271.08	Base Mineral Extraction - Oil and Gas	10
1271.09	Base Harbor Facilities	91
1271.10	Base Navigation Aids	47
1271.11	Base Developed Local Parks and Recreation	10
1271.12	Base Vacant Undifferentiated	1
1272	Vacant Area	2
1273	Air Field	45
1274	Former Base (Built-up Area)	65
1275	Former Base Vacant Area	2
1276	Former Base Air Field	91
1311	Manufacturing, Assembly, and Industrial Services	91
1312	Motion Picture and Television Studio Lots	82
1313	Packing Houses and Grain Elevators	96
1314	Research and Development	91
1321	Manufacturing	91
1322	Petroleum Refining and Processing	91
1323	Open Storage	66
1324	Major Metal Processing	91
1325	Chemical Processing	91
1331	Mineral Extraction - Other Than Oil and Gas	10
1332	Mineral Extraction - Oil and Gas	10
1340	Wholesaling and Warehousing	91
1411	Airports	91
1411.01	Airstrip	10
1412	Railroads	15
1412.01	Railroads-Attended Pay Public Parking Facilities	91
1412.02	Railroads-Non-Attended Public Parking Facilities	91
1412.03	Railroads-Manufacturing, Assembly, and Industrial Services	91
1412.04	Railroads-Petroleum Refining and Processing	91
1412.05	Railroads-Open Storage	66
1412.06	Railroads-Truck Terminals	91
1413	Freeways and Major Roads	91
1414	Park-and-Ride Lots	91
1415	Bus Terminals and Yards	91
1416	Truck Terminals	91
1417	Harbor Facilities	91
1418	Navigation Aids	47
1420	Communication Facilities	82
1420.01	Communication Facilities-Antenna	2

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Code	Land Use Description	% Impervious
1431	Electrical Power Facilities	47
1431.01	Electrical Power Facilities-Powerlines (Urban)	2
1431.02	Electrical Power Facilities-Powerlines (Rural)	1
1432	Solid Waste Disposal Facilities	15
1433	Liquid Waste Disposal Facilities	96
1434	Water Storage Facilities	91
1435	Natural Gas and Petroleum Facilities	91
1435.01	Natural Gas and Petroleum Facilities-Manufacturing, Assembly, and In	91
1435.02	Natural Gas and Petroleum Facilities-Petroleum Refining and Processing	91
1435.03	Natural Gas and Petroleum Facilities-Mineral Extraction – Oil and Gas	10
1435.04	Natural Gas and Petroleum Facilities-Vacant Undifferentiated	1
1436	Water Transfer Facilities	96
1437	Improved Flood Waterways and Structures	100
1440	Maintenance Yards	91
1450	Mixed Transportation	90
1460	Mixed Transportation and Utility	91
1460.01	Mixed Utility and Transportation-Improved Flood Waterways and Structures	100
1460.02	Mixed Utility and Transportation-Railroads	15
1460.03	Mixed Utility and Transportation-Freeways and Major Roads	91
1500	Mixed Commercial and Industrial	91
1600	Mixed Urban	89
1700	Under Construction (Use appropriate value)	91
1810	Golf Courses	3
1821	Developed Local Parks and Recreation	10
1822	Undeveloped Local Parks and Recreation	2
1831	Developed Regional Parks and Recreation	2
1832	Undeveloped Regional Parks and Recreation	1
1840	Cemeteries	10
1850	Wildlife Preserves and Sanctuaries	2
1850.01	Wildlife-Commercial Recreation	90
1850.02	Wildlife-Other Special Use Facilities	86
1850.03	Wildlife-Developed Local Parks and Recreation	10
1860	Specimen Gardens and Arboreta	15
1870	Beach Parks	10
1880	Other Open Space and Recreation	10
2110	Irrigated Cropland and Improved Pasture Land	2
2120	Non-Irrigated Cropland and Improved Pasture Land	2
2200	Orchards and Vineyards	2
2300	Nurseries	15
2400	Dairy, Intensive Livestock, and Associated Facilities	42
2500	Poultry Operations	62
2600	Other Agriculture	42
2700	Horse Ranches	42

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Code	Land Use Description	% Impervious
3100	Vacant Undifferentiated	1
3200	Abandoned Orchards and Vineyards	2
3300	Vacant With Limited Improvements (Use appropriate value)	42
3400	Beaches (Vacant)	1
4100	Water, Undifferentiated	100
4200	Harbor Water Facilities	100
4300	Marina Water Facilities	100
4400	Water Within a Military Installation	100

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APPENDIX “D”

Best Management Practice (BMPs)

1. Connector Pipe Screen

2. Filterra Product

3. Typical backyard Bio Treatment basin

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Connector Pipe Screen

2019-02-25 Susmp Report.pdf

(index.php)

Products

- DrainPac™ (drainPacs.php)
  - DrainPac™ Variations (drainPac_variations.php)
  - DrainPac™ Specs & Drawings (drainPac_specs.php)
- Screen Covers (screenCovers.php)
  - Wing-Gate™ Specs & Drawings (wing_gate.php)
- Connector Pipe Screen Specs & Drawings (cps.php)

Other Highlights

- Storm Water Management (storm_water_management.php)
- Video Clip Gallery (videoClipGallery.php)
- Brochure Downloads (brochureDownloads.php)
- Online Quote Request (onlineQuoteRequest.php)
- Sales Rep Contact Information (sales_rep_contact_information.php)

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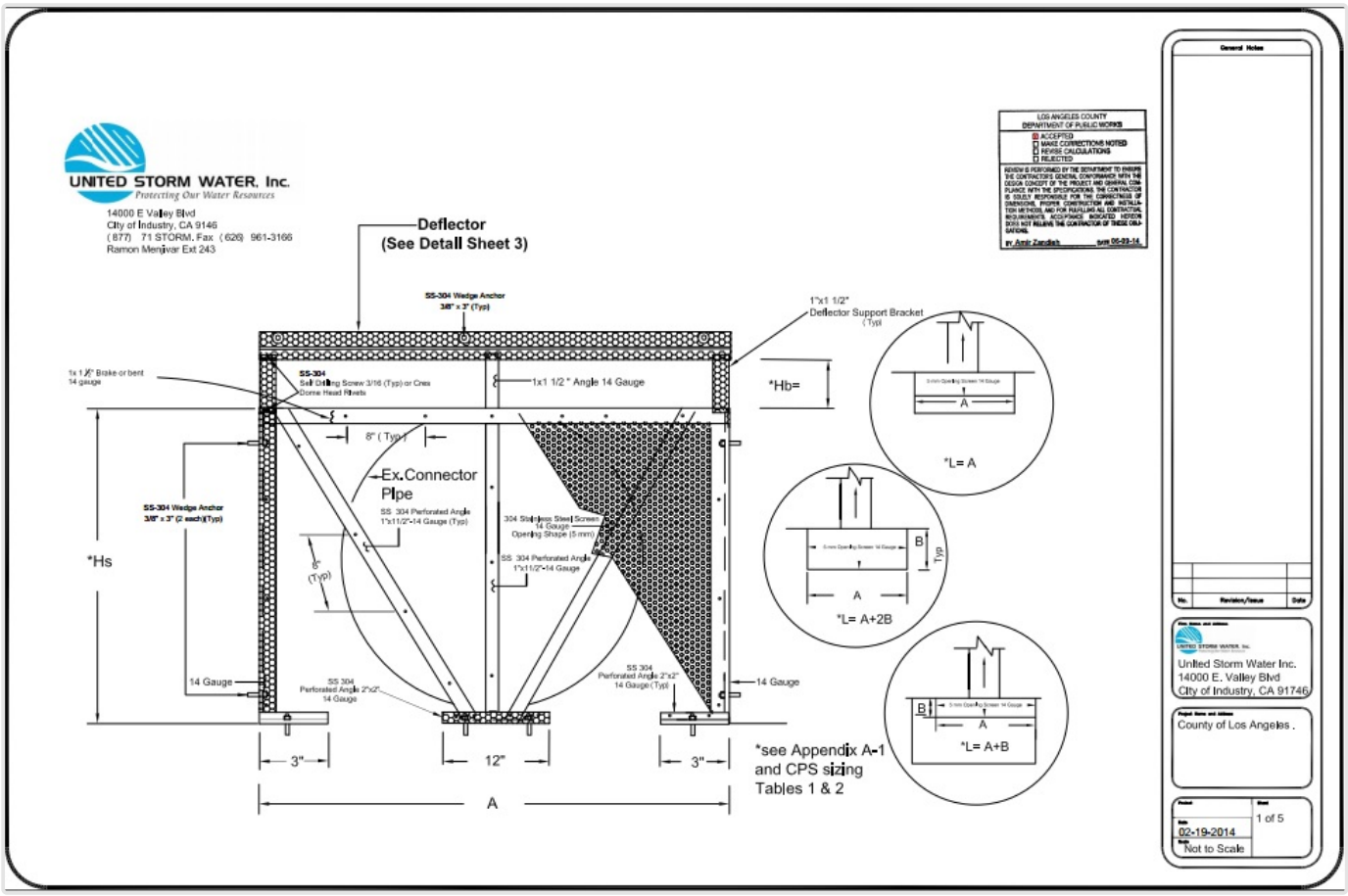
Connector Pipe Screen (CPS) Unit Specs & Drawings

Listed within the Full Trash Capture Certification Program by both the Los Angeles and the San Francisco Bay Regional Water Quality Control Boards, our Connector Pipe Screen (CPS) has become the BMP of choice for cities as they strive to meet rigorous storm water regulations. This metal screen assembly is installed inside a catch basin, in front of the outlet pipe, for preventing debris from entering the storm drain system. A CPS unit is designed to retain all trash and gross solids larger than 5 mm (0.197 in) inside the catch basin (e.g. cigarette buds), and once in place it also retains large volumes of sediment as well. Therefore, the trash capture and storage capacity of this product is dependent upon the size of the catch basin where it is to be installed. A CPS unit can be used in conjunction with a curb inlet screen cover and/or DrainPac™ Storm Drain Filter Insert for added effectiveness based on the level of trash and debris that commonly accumulates at the site.

CPS Unit Specifications

- Manufactured from S-304 perforated stainless steel having 5 mm diameter holes
- Has a minimum overall vertical height of 2 feet
- Has a deflector to prohibit debris from falling behind the screen
- Has an open area of 50% for overflow bypass
- The perimeter of the insert includes a structural frame for stiffness and a bolting surface to fasten the insert to the catch basin floor and wall
- Has a structural integrity to withstand a force of standing water within the catchment area
- Not recommended for installation in drop inlet type catch basins nor catch basins having connector pipes greater than 42 inches diameter

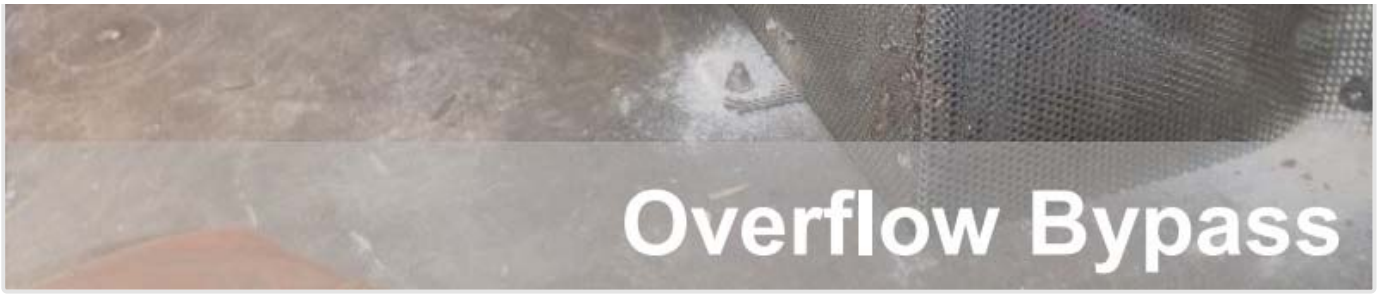


(http://unitedstormwater.com/pdf/cps_drawings.pdf)

2019-02-25 Susmp Report.pdf

Connector Pipe Screen Drawings (PDF) (http://unitedstormwater.com/pdf/cps_drawings.pdf)

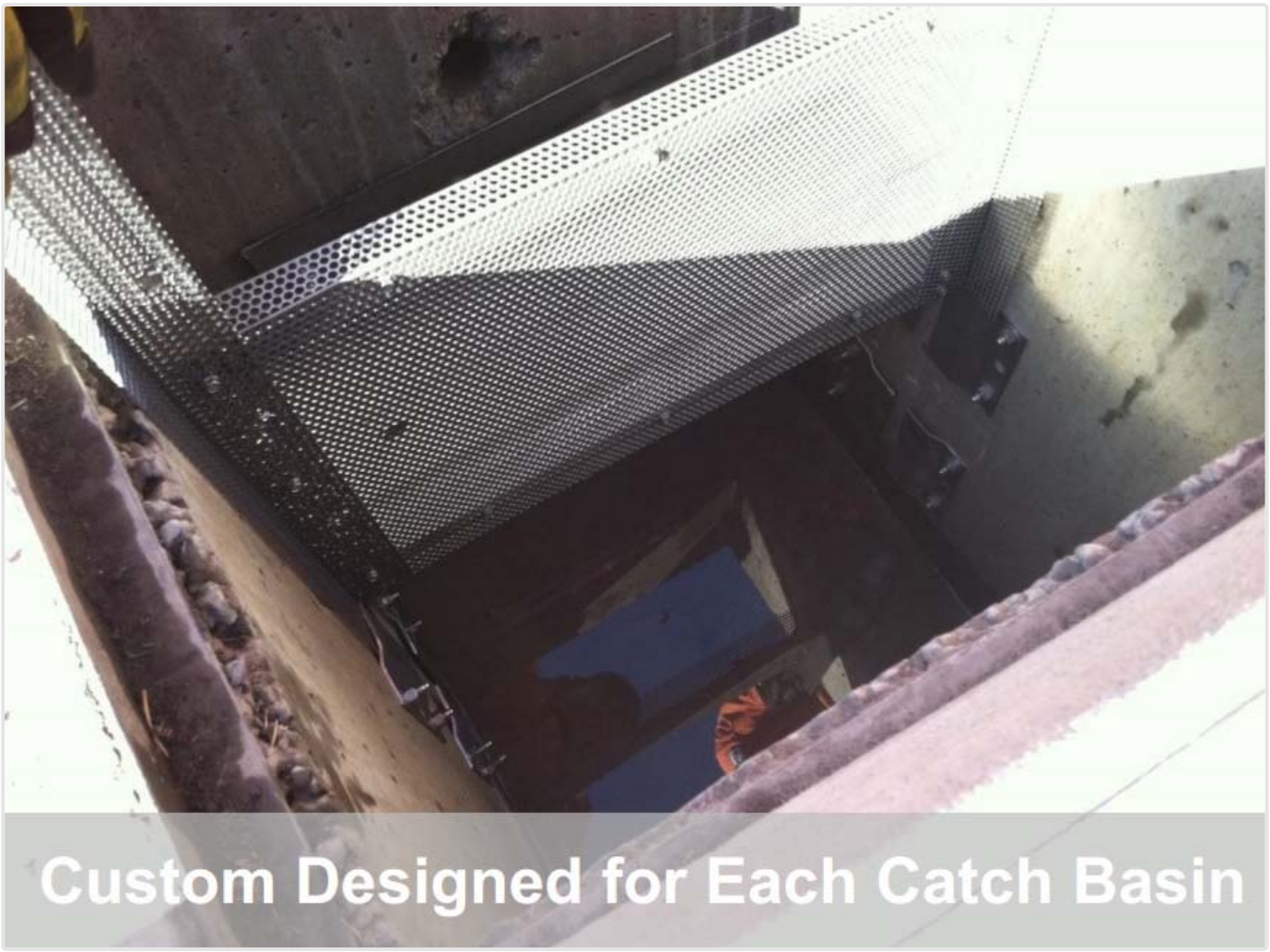
2019-02-25 Susmp Report.pdf



A connector pipe screen (CPS) unit can be installed with a curb inlet screen cover or a DrainPac™ storm drain filter insert for added effectiveness!

CPS Unit Custom Configurations

- Custom configurations are designed as needed for nearly any catch basin scenario (e.g., pipe lines entering from any wall or catch basin floor).
- CPS units can be configured to be permanently mounted to the catch basin or to have a quick disconnect feature to facilitate pipe line jetting or to prevent flooding should the basin drainage system become clogged.
- Catch basins containing CPS units should be cleaned when the screen is ≤ 40% covered to prevent the possibility of flooding and/or pollutant overflow into lateral pipe lines.



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2019-02-25 Susmp Report.pdf

Standard Configuration - Clean

New installation with gauge painted on catch basin wall so that crew inspecting drains know when the basin requires cleaning or maintenance.

Certified full capture connector pipe screen (CPS) units are custom-designed and fabricated according to customer-specific requirements!

(https://plus.google.com/+UnitedStormWaterIncCityofIndustry/posts?hl=en) **(https://www.youtube.com/user/UnitedStormWater)**

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Site Map (sitemap.php) | **FAQ (faq.php)** | **Careers (careers.php)** | **Contact (general_contact_information.php)**

UNITED STORM WATER, Inc.
Protecting Our Water Resources

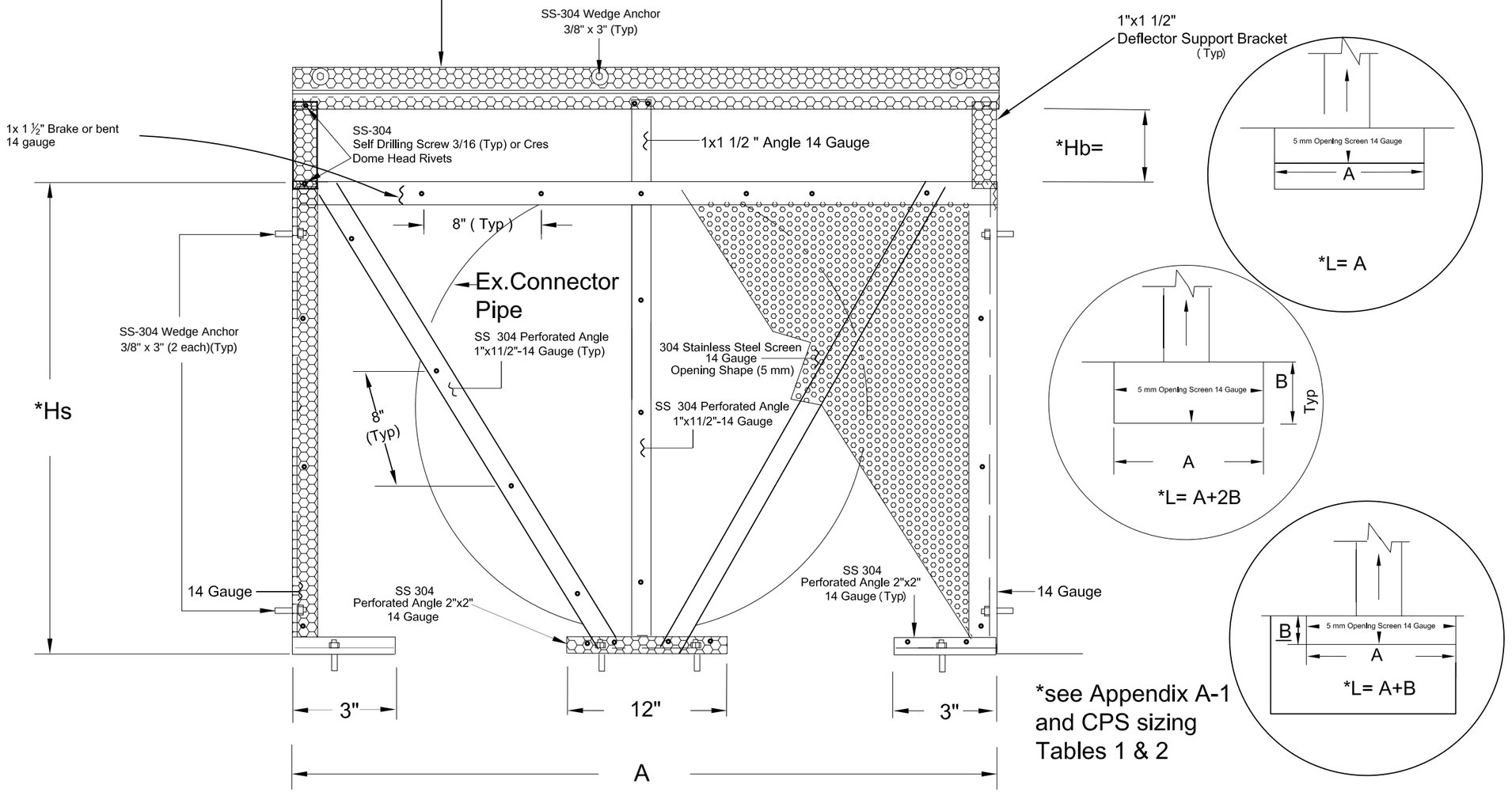
14000 E Valley Blvd
City of Industry, CA 9146
(877) 71 STORM. Fax (626) 961-3166
Ramon Menjivar Ext 243

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

- [X] ACCEPTED
- [ ] MAKE CORRECTIONS NOTED
- [ ] REVISE CALCULATIONS
- [ ] REJECTED

REVIEW IS PERFORMED BY THE DEPARTMENT TO ENSURE THE CONTRACTOR'S GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE SPECIFICATIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE CORRECTNESS OF DIMENSIONS, PROPER CONSTRUCTION AND INSTALLATION METHODS, AND FOR FULFILLING ALL CONTRACTUAL REQUIREMENTS. ACCEPTANCE INDICATED HEREON DOES NOT RELIEVE THE CONTRACTOR OF THESE OBLIGATIONS.

BY Amir Zandieh DATE 06-09-14



*see Appendix A-1
and CPS sizing
Tables 1 & 2

General Notes

No.	Revision/Issue	Date

Firm Name and Address
United Storm Water Inc.
14000 E. Valley Blvd
City of Industry, CA 91746

Project Name and Address
County of Los Angeles .

Project	Sheet
Date 02-19-2014	1 of 5
Scale Not to Scale	

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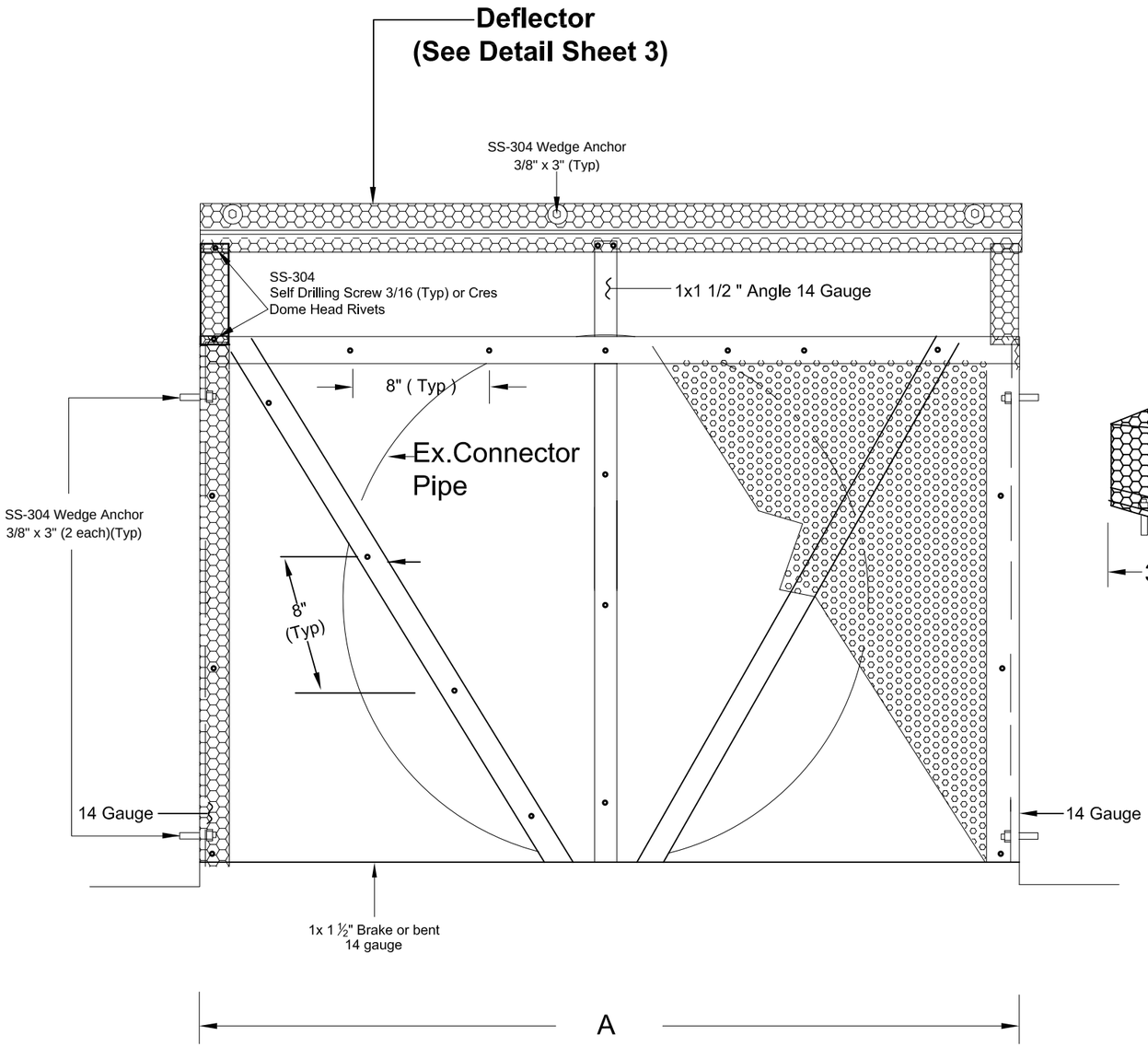
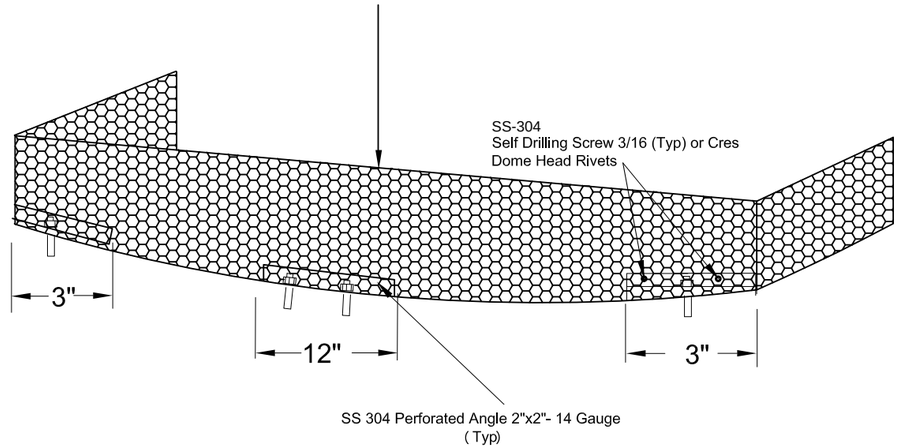


1 Pc extension panel
304 Stainless Steel Screen
(14) Gauge
Opening Shape (5mm)



Top View

General Notes

No.	Revision/Issue	Date

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UNITED STORM WATER, Inc.
United Storm Water Inc.
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Project Name and Address
County of Los Angeles .

Project	Sheet
Date 02-19-2014	2 of 5
Scale Not to Scale	

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LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

- [X] ACCEPTED
- [ ] MAKE CORRECTIONS NOTED
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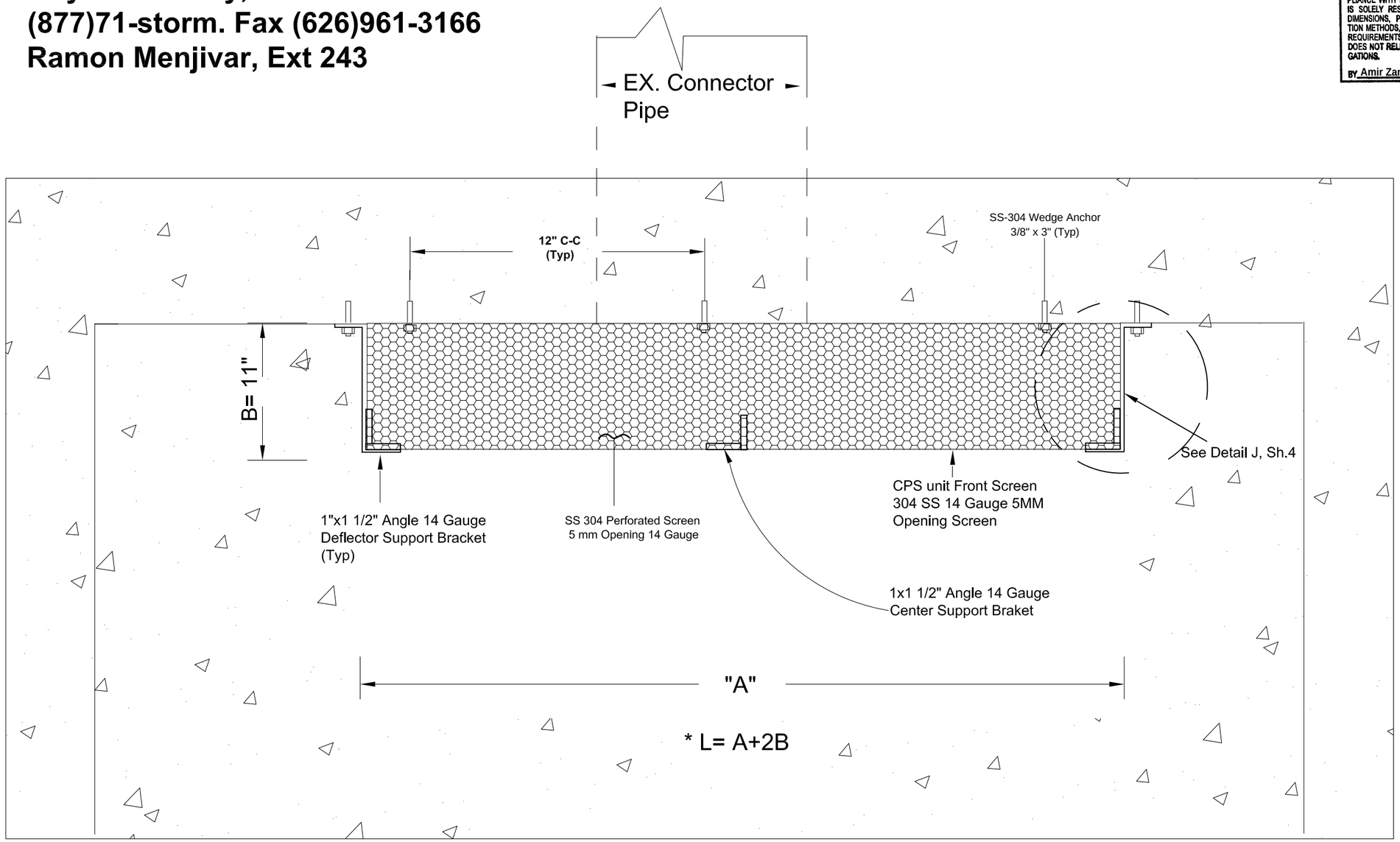
BY Amir Zandieh DATE 06-09-14


EX. Connector Pipe
12" C-C (Typ)
SS-304 Wedge Anchor 3/8" x 3" (Typ)
B= 11"
See Detail J, Sh.4
CPS unit Front Screen 304 SS 14 Gauge 5MM Opening Screen
1"x1 1/2" Angle 14 Gauge Deflector Support Bracket (Typ)
SS 304 Perforated Screen 5 mm Opening 14 Gauge
1x1 1/2" Angle 14 Gauge Center Support Braket
"A"
* L= A+2B

* see Appendix A-1 and CPS Sizing Tables 1 & 2

Deflector Detail
Plain View (Sheet 1)
N.T.S.

General Notes

No.	Revision/Issue	Date

Firm Name and Address
United Storm Water Inc.
14000 E. Valley Blvd
City of Industry, CA 91746

Project Name and Address
County of Los Angeles

Project

Date 02-19-2014

Scale Not to Scale

Sheet 3 of 5

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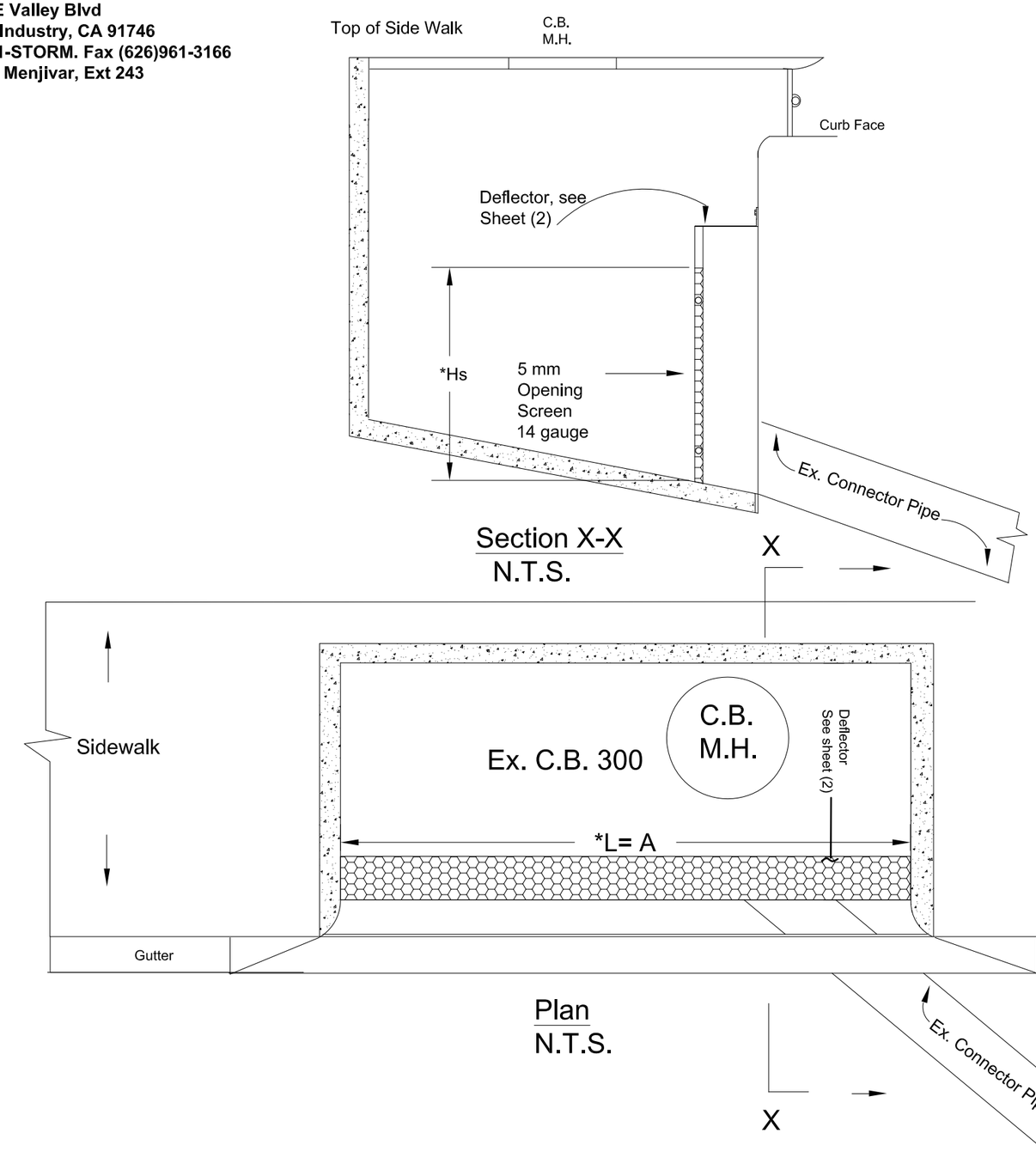
(877) 71-STORM. Fax (626)961-3166
Ramon Menjivar, Ext 243



LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

- [x] ACCEPTED
- [ ] MAKE CORRECTIONS NOTED
- [ ] REVISE CALCULATIONS
- [ ] REJECTED

REVIEW IS PERFORMED BY THE DEPARTMENT TO ENSURE THE CONTRACTOR'S GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE SPECIFICATIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE CORRECTNESS OF DIMENSIONS, PROPER CONSTRUCTION AND INSTALLATION METHODS, AND FOR FULFILLING ALL CONTRACTUAL REQUIREMENTS. ACCEPTANCE INDICATED HEREON DOES NOT RELIEVE THE CONTRACTOR OF THESE OBLIGATIONS.

BY Amir Zandieh DATE 06-09-14

* See Appendix
A-1 and CPS sizing Tables 1 & 2

General Notes

No.	Revision/Issue	Date

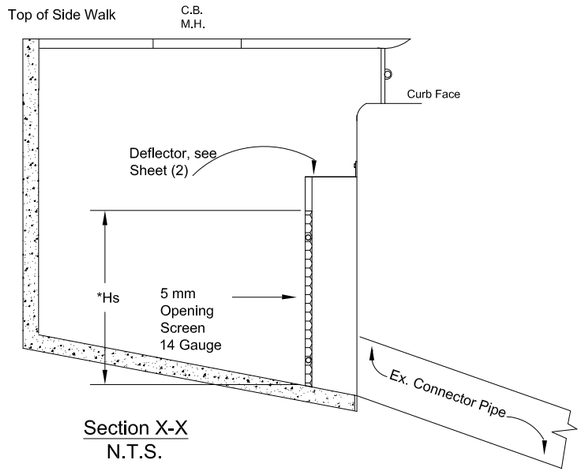
Firm Name and Address
United Storm Water Inc.
14000 E. Valley Blvd
City of Industry, CA 91746

Project Name and Address
County of Los Angeles

Project	Sheet
Date 02-19-2014	4 of 5
Scale Not to Scale	

UNITED STORM WATER, Inc.
Protecting Our Water Resources

14000 E. Valley Blvd
City of Industry, CA 91746
Ramon Menjivar, Office (877)
71-STORM. Ext 243 (626)890-7104



Section X-X
N.T.S.

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

- [X] ACCEPTED
- [ ] MAKE CORRECTIONS NOTED
- [ ] REVISE CALCULATIONS
- [ ] REJECTED

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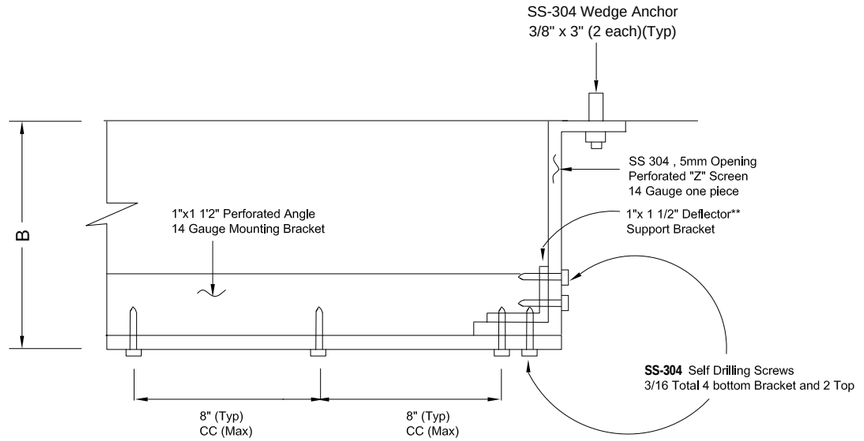
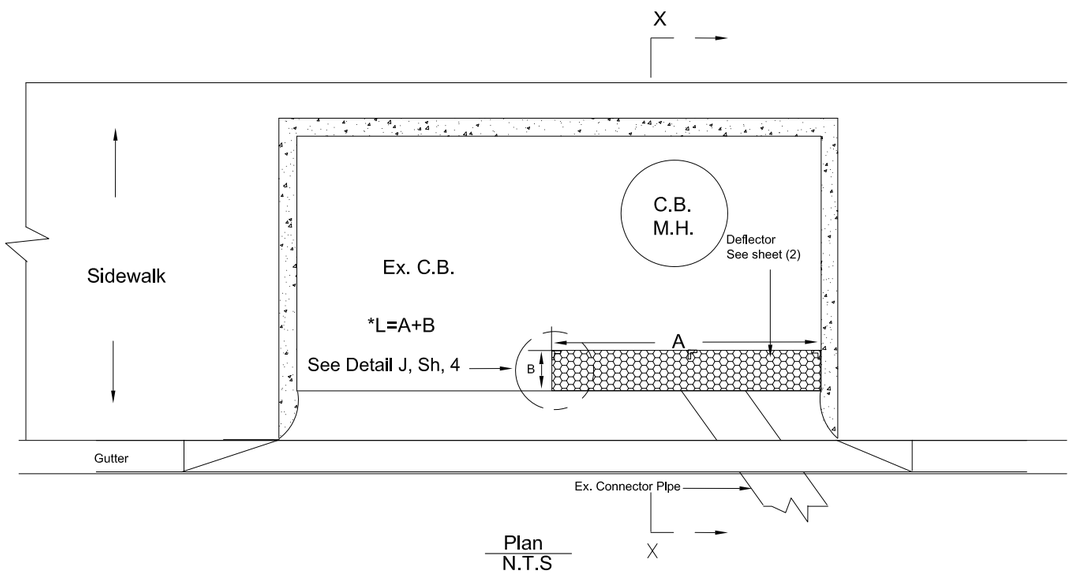
BY Amir Zandieh DATE 06-09-14



Detail J (Sh.2)
NTS



Plan
N.T.S

* See Appendix A-1
and CPS Sizing Tables 1 & 2

** Both legs of Deflector Support Bracket must extend to the top of the Deflector and Also extend at least to the bottom of the Mounting Bracket.

General Notes

No.	Revision/Issue	Date

Firm Name and Address
United Storm Water Inc.
14000 E. Valley Blvd
City of Industry, CA 91746

Project Name and Address
County of Los Angeles

Project

Date
02-19-2014

Scale
Not to Scale

Sheet
5 of 5

2019-02-25 Susmp Report.pdf

Filterra Product

2019-02-25 Susmp Report.pdf

From: Henry, Richard [mailto:RHenry@conteches.com]
Sent: Tuesday, February 19, 2019 4:13 PM
To: Selim
Cc: Dubrock, Alexandra
Subject: RE: Sizes for Filterra

Hi Selim,

Below is a table for the maximum flow rates you've asked for sizing and costs for:

Filterra media bay size	Maximum treatment flow rate, cfs	Volume treated in 24 hrs, cf
6x6	0.083	7200
7x13	0.211	18200
6x10	0.139	12000
8x16	0.296	25600
4x4	0.037	3200
6.5x4	0.06	5200

Filterras are required to drain down within 24 hrs.

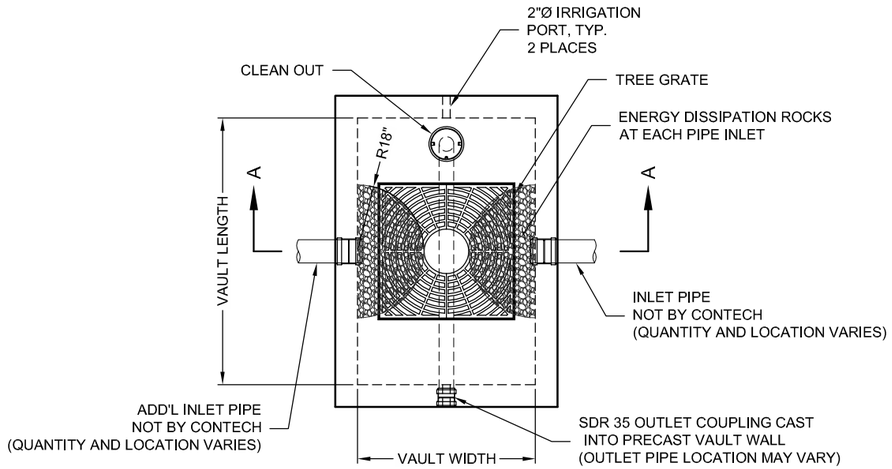
I've attached details for the Offline and Peak Diversion models. The Peak Diversion is the one we discussed on the phone, to replace the catch basin. We don't believe we have installation details for Filterra.

Let me know if you need anything else.

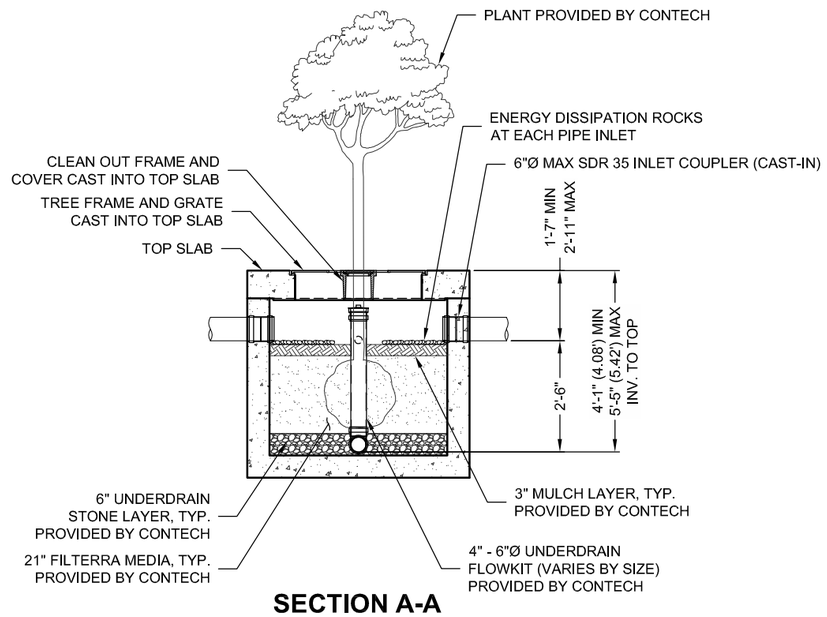
Thanks,

Richard Henry, E.I.
Design Engineer - Stormwater Products

Contech Engineered Solutions LLC
11815 NE Glenn Widing Dr. | Portland, OR 97220
Off: 503-258-3171 Fax: 800-561-1271
rhenry@conteches.com
www.ContechES.com



PLAN VIEW



SECTION A-A

INTERNAL PIPE CONFIGURATION MAY VARY
DEPENDING UPON OUTLET LOCATION.

FT-P STANDARD OFFLINE CONFIGURATION

DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	OUTLET PIPE	TREE GRATE QTY & SIZE	MIN NO. OF INLET PIPES
FT0404-P	ALL	4 x 4	4 x 4	4" SDR 35	(1) 3' x 3'	1
FT0604-P	N/A CA	6 x 4	6 x 4	4" SDR 35	(1) 3' x 3'	1
FT0606-P	ALL	6 x 6	6 x 6	4" SDR 35	(1) 3' x 3'	1
FT06504-P	CA ONLY	6.5 x 4	6.5 x 4	4" SDR 35	(1) 3' x 3'	1
FT078045-P	MID-ATL ONLY	7.83 x 4.5	7.83 x 4.5	4" SDR 35	(1) 3' x 3'	1
FT0804-P	N/A MID-ATL	8 x 4	8 x 4	4" SDR 35	(1) 3' x 3'	1
FT0806-P	ALL	8 x 6	8 x 6	4" SDR 35	(1) 4' x 4'	1
FT1006-P	ALL	10 x 6	10 x 6	6" SDR 35	(1) 4' x 4'	2
FT1206-P	ALL	12 x 6	12 x 6	6" SDR 35	(2) 4' x 4'	2
FT1307-P	ALL	13 x 7	13 x 7	6" SDR 35	(2) 4' x 4'	2
FT1408-P	CALL CONTECH	14 x 8	14 x 8	6" SDR 35	(2) 4' x 4'	3
FT1608-P	CALL CONTECH	16 x 8	16 x 8	6" SDR 35	(2) 4' x 4'	3
FT1808-P	CALL CONTECH	18 x 8	18 x 8	6" SDR 35	(2) 4' x 4'	3
FT2008-P	CALL CONTECH	20 x 8	20 x 8	6" SDR 35	(3) 4' x 4'	4
FT2208-P	CALL CONTECH	22 x 8	22 x 8	6" SDR 35	(3) 4' x 4'	4

N/A = NOT AVAILABLE

filterra®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,625,485; 7,425,261; 7,833,412; RELATED FOREIGN PATENTS.

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CONTECH®
ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA OFFLINE - PIPE (FT-P) CONFIGURATION DETAIL

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FT-PIPELAYOUT DETAILSDWG\FILTERRA PIPE CONFIG DTL.DWG 11/1/2017 2:04 PM

2019-02-25 Sump Report.pdf

2019-02-25 Sysmp-Report.pdf

CONTECH®
ENGINEERED SOLUTIONS

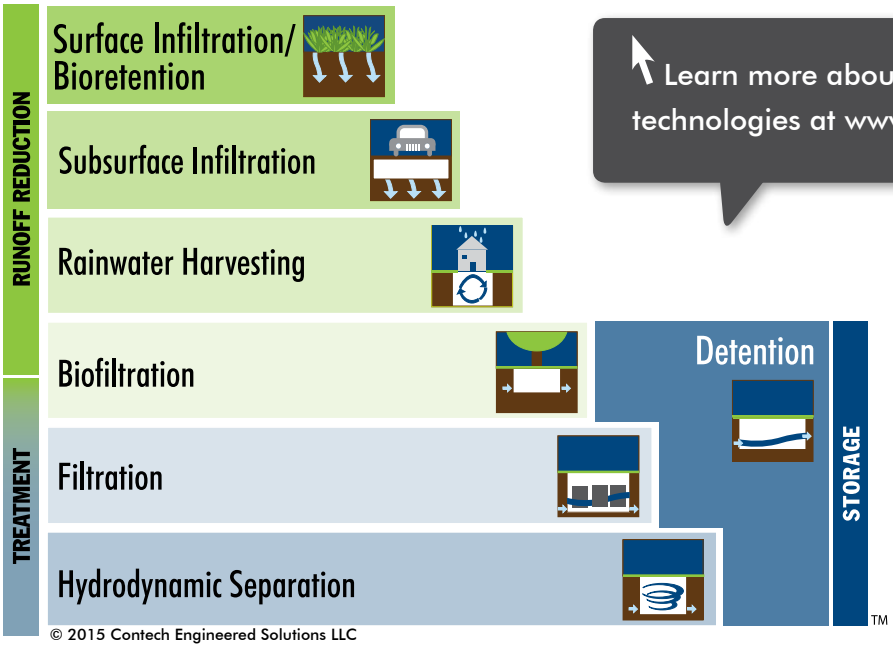
Filterra® Bioretention System

Solutions Guide

Stormwater Solutions from Contech

Selecting the Right Stormwater Solution Just Got Easier...

It's simple to choose the right stormwater solution to achieve your goals with the Contech Stormwater Solutions Staircase. First, select the runoff reduction practices that are most appropriate for your site, paying particular attention to pretreatment needs. If the entire design storm cannot be retained, select a treatment best management practice (BMP) for the balance. Finally, select a detention system to address any outstanding downstream erosion.



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Learn more about all of our stormwater technologies at www.ContechES.com/stormwater

Low Impact Development Site Planner

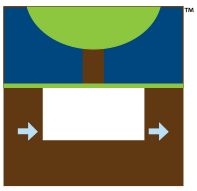
The Low Impact Development (LID) Site Planner is a free, web-based tool intended to guide you in preliminary selection of the most effective and likely to be approved stormwater control measures that are technically feasible given known site constraints. To utilize this tool, visit www.conteches.com/lidsiteplanner

Benefits of the tool include:

- A fast, easy-to-use tool that follows a Low Impact Development design approach consistent with regulations that prioritize Green Infrastructure.
- Helps minimize the cost and delay of redesigns by prompting users to consider a wide range of common site constraints early in the design process.
- Captures specific site conditions precluding the use of infeasible BMPs.
- Allows flexibility to select flow through treatment controls where runoff reduction is not feasible.
- Provides a summary report with links to design guides, standard details, and specifications for stormwater management approaches that are likely to be feasible and approved on the project.

2019-02-25 Susmp Report.pdf

Bioretention as a Stormwater Management Strategy



Filtration and Biological Treatment in One System

Stormwater management regulations such as Low Impact Development (LID) and Green Infrastructure (GI) have proliferated throughout the United States.

Implementing LID and GI in urban environments is challenging, as they often require a large footprint. That doesn't mean LID/GI is not possible, it just means the solution may take a more engineered form. Contech has addressed this need by developing a unique solution – the Filterra Bioretention System.

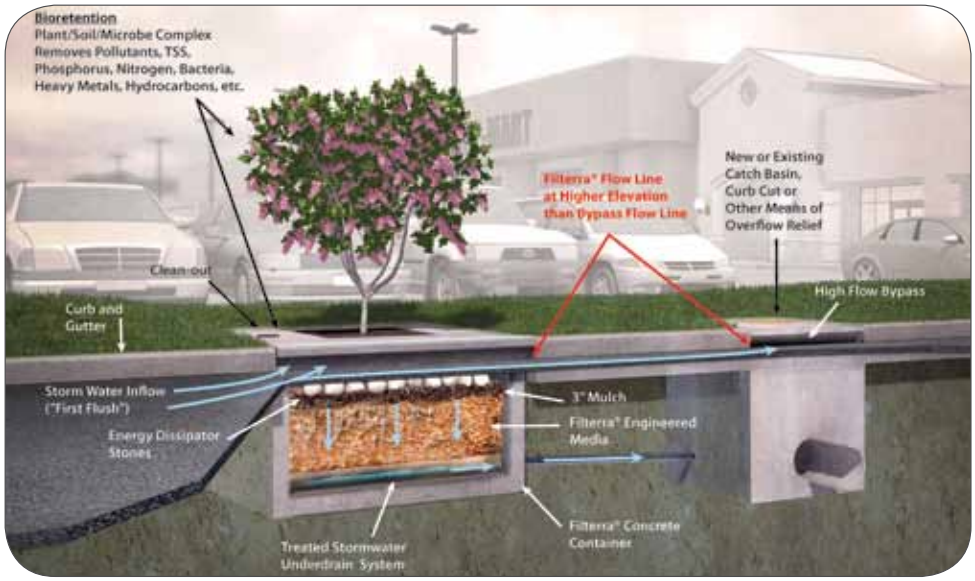
What is Filterra?

Filterra is an engineered biofiltration device with components that make it similar to bioretention in pollutant removal and application, but has been optimized for high volume/flow treatment in a compact system. Its small footprint allows Filterra to be used on highly developed sites such as landscaped areas, parking lots, and streetscapes. Filterra is adaptable and can be used alone or in combination with perforated pipes or chambers to optimize runoff reduction.

How The Standard Offline Filterra Systems Works

Stormwater runoff enters the Standard Offline Filterra system through a curb-inlet opening and flows through a specially designed filter media mixture contained in a landscaped modular container. The biofiltration media captures and immobilizes pollutants; some of these pollutants are then decomposed, volatilized and incorporated into the biomass of the Filterra system's micro/macro fauna and flora. Stormwater runoff flows through the media and into an underdrain system at the bottom of the container, where the treated water is discharged. The Standard Offline Filterra system utilizes a downstream catch basin or curb inlet for bypass flows allowing for the shallowest profile and most flexible design of any of the Filterra configurations.

In areas where runoff reduction and infiltration are mandated or desirable, Filterra can be paired with other Contech products such as ChamberMaxx or an Urban Green Rainwater Harvesting system to provide even greater alignment with LID/GI goals.



Learn more at www.ContechES.com/filterra

2019-02-25 Susmp Report.pdf

Filterra® Features & Benefits

- **Regulatory Compliance** – Multiple third-party field tests confirmed Filterra meets regulatory requirements for pollutant removal under TAPE, TARP, and NJCAT testing.
- **Value** – Filterra offers a cost effective stormwater treatment system featuring easy installation and simple maintenance.
- **Aesthetics** – Landscaping enhances the appearance of your site making it more attractive while removing pollutants.
- **Flexible** – Multiple sizes and a variety of configurations available to meet site-specific needs.
- **Versatile** – Filterra is ideal for both new construction and urban retrofits, as well as:
  - » Streetscapes
  - » Urban settings
  - » Parking lots
  - » Roof drains
  - » Highways
- **Easy Installation** – Delivered on-site, ready to lift and place.
- **Activation** – Performed by Contech-certified providers to ensure effective performance from the start.
- **Maintenance** – Simple and safe (no confined space access), and the first year of maintenance is included with the purchase of every system.

Third-party field testing confirmed Filterra meets regulatory requirements for pollutant removal under nationally recognized TAPE, TARP, and NJCAT testing protocols.

Additional Filterra® Configurations

Filterra is offered in multiple configurations to meet site specific needs. These configurations make Filterra a versatile yet effective stormwater BMP with a low life-cycle cost.

Filterra Internal Bypass – Curb

The Filterra Internal Bypass – Curb incorporates a curb inlet treatment chamber and internal high flow bypass in a single structure. This eliminates the need for a separate bypass structure and enables placement on grade or in a "sag" or "sump" condition.

Filterra Internal Bypass – Pipe

The Filterra Internal Bypass – Pipe treats stormwater runoff from rooftops or other sub-grade sources such as area drains. Higher flows bypass the biofiltration treatment system via an overflow/bypass pipe design.

Filterra - Street Tree

The Filterra Street Tree accommodates trees larger than the standard small-medium-sized trees used in standard Filterra units. These larger trees can provide benefits to site landscape designs on canopy cover, tree count, or percentage of green area.

Filterra – Sediment Chamber

The Filterra Sediment Chamber includes a pre-treatment chamber that provides settling for debris and sediment, meeting water quality volume temporary hold requirements in some jurisdictions, and provides a treatment-train feature to a standard Filterra.

Filterra – Recessed Top

The Filterra Recessed Top allows for a seamless integration of Filterra into the landscape design with pavers, mulch, sod, or even architectural concrete.

Learn more at www.ContechES.com/filterra

Filterra® Media – Proven Pollutant Removal

At the heart of the Filterra system is Filterra engineered biofiltration media; a specified gradation of washed aggregate and organic material homogeneously blended under strict quality controlled conditions. Using data from independent, third-party studies including the University of Virginia (TARP), Herrera Environmental Consultants (TAPE), Terraphase Engineering (NJCAT), North Carolina State University (TAPE & TARP) and Geosyntec Consultants, the filter media has been optimized to operate under high flow rates while maintaining pollutant removal performance. Filterra media is tested for hydraulic functionality, fertility, and particle size distribution to ensure uniform performance.

Filterra media also supports a vegetation component consisting of grasses, shrubs, or trees that assist with the adsorption of pollutants with biological uptake/storage and pollutant consumption by microbes within the plant root zone.

Measured Pollutant Removal Performance

(Ranges varying with particle size, pollutant loading and site conditions)

TSS Removal	85%
Phosphorus Removal	70%
Nitrogen Removal	43%
Total Copper Removal	58%
Dissolved Copper Removal	46%
Total Zinc Removal	66%
Dissolved Zinc Removal	58%
Oil & Grease	93%

Information on the pollutant removal efficiency of the filter media/plant media is based on third-party lab and field studies.

Some jurisdictions recognize higher removal rates - see your Contech Stormwater Consultant for details.

Filterra media has been **optimized** to operate under high flow rates while maintaining pollutant removal performance.

Filterra® – Regulatory Approvals

Based on more than 20 years of research and development, testing and field monitoring, Filterra's performance has been recognized by some of the nation's most significant regulatory agencies, including the states of Washington, Virginia, Maryland and New Jersey, the District of Columbia, the Texas Commission on Environmental Quality and the Atlanta (GA) Regional Commission. Highlights regarding these approvals include:

- Granted ESD (Environmental Site Design) status by the state of Maryland Department of the Environment (MDE).
- GULD-approved for ALL pollutants of concern with the state of Washington Department of Ecology (WA-Ecology) with (2) TAPE field tests.
- Third-party nationally recognized field/lab tests completed: (1) TARP, (2) TAPE, (1) NJCAT and (1) NC-DENR.

Filterra® – In the Field

We make it easy! The Filterra system is delivered to the job site with all components except plant and mulch.

Filterra – Installation

- Bioretention system sealed from construction sediment.
- Contractor off-loads top and vault separately.
- Set vault to grade on 6" compacted #57, pipe up, backfill, set top.

Filterra – Activation

- Contractors: Do NOT remove throat plate nor tree grate covers.
- Vegetation selection guidance based on your climate zone.
- Contech-certified providers conduct on-site activation with installation of mulch and plant.

Filterra – Maintenance

- The first year of maintenance is included with every system.
- Maintenance is low-cost, low-tech and simple:
  - » Remove trash, sediment, and mulch.
  - » Replace with a fresh layer of 3" of mulch.
  - » Can be done by landscape contractor.
  - » No confined space entry.

The **first year of maintenance** is **included** with the purchase of every Filterra system.

Learn more at www.ContechES.com/filterra

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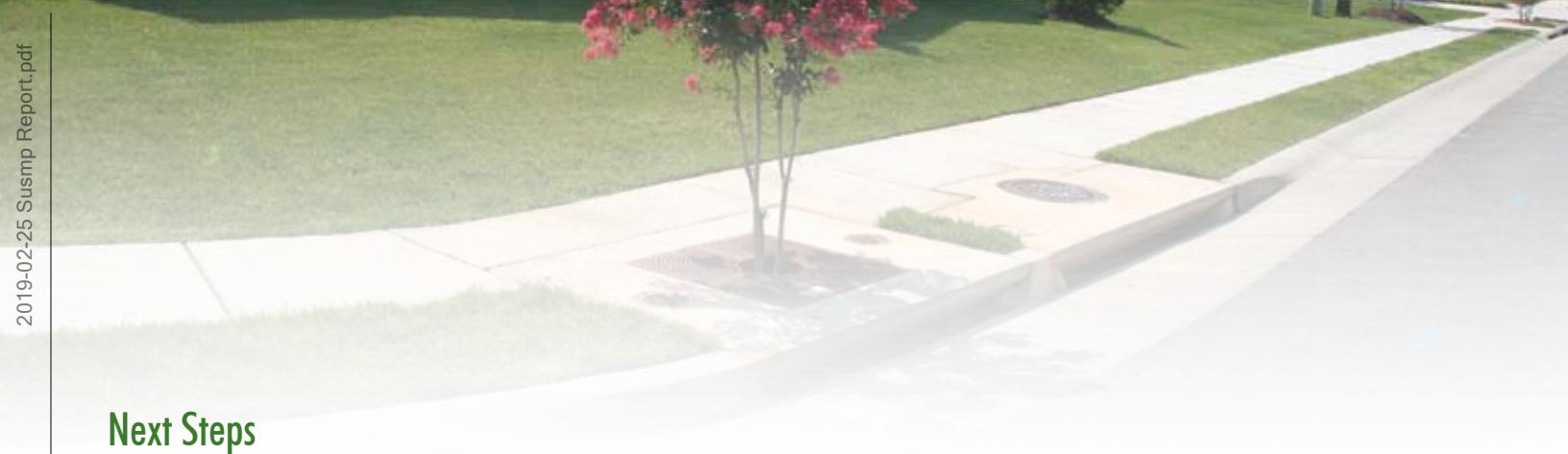


Next Steps

Dig Deeper

Find all the information you need at www.ContechES.com, including field and laboratory test results, approvals, brochures, design guides, standard details and specifications within the product section of our site.

Connect with Us

We're here to make your job easier – and that includes being able to get in touch with us when you need to. www.ContechES.com/localresources.

While you're there, be sure to check out our upcoming seminar schedule or request an in-house technical presentation.

Start a Project

If you are ready to begin a project, contact your local representative to get started. Or you can check out our design toolbox for all our online resources at www.ContechES.com/startaproject.

Links to Stormwater Design Tools:

To use the Land Value Calculator, visit: www.ContechES.com/lvc

To use the Design Your Own Detention System tool, visit: www.ContechES.com/dyods

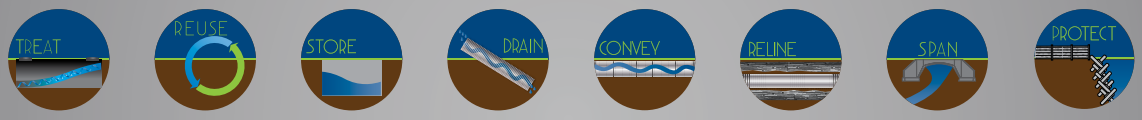
To use the Design Your Own Hydrodynamic Separator tool, visit: www.ContechES.com/dyohds

To use the Rainwater Harvesting Runoff Reduction Calculator tool, visit: www.ContechES.com/rwh-calculator

To use the Low Impact Development Site Planner tool, visit: www.ContechES.com/lidsiteplanner

CONTECH® ENGINEERED SOLUTIONS

COMPLETE SITE SOLUTIONS



STORMWATER SOLUTIONS

Helping to satisfy stormwater management requirements on land development projects

- Stormwater Treatment
- Detention/Infiltration
- Rainwater Harvesting
- Biofiltration/Bioretention

PIPE SOLUTIONS

Meeting project needs for durability, hydraulics, corrosion resistance, and stiffness

- Corrugated Metal Pipe (CMP)
- Steel Reinforced Polyethylene (SRPE)
- High Density Polyethylene (HDPE)
- Polyvinyl Chloride (PVC)

STRUCTURES SOLUTIONS

Providing innovative options and support for crossings, culverts, and bridges

- Plate, Precast & Truss bridges
- Hard Armor
- Retaining Walls
- Tunnel Liner Plate

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Get Social With Us!

Filterra Brochure 3M 1/16

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FSC

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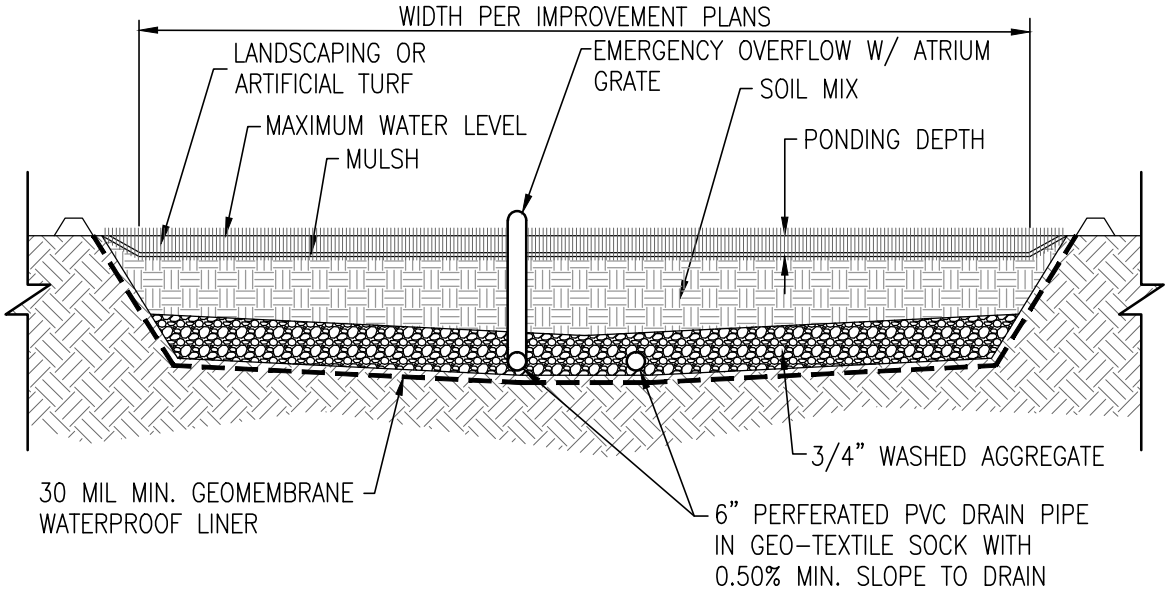
Typical backyard Bio Treatment basin


WIDTH PER IMPROVEMENT PLANS
LANDSCAPING OR ARTIFICIAL TURF
MAXIMUM WATER LEVEL
MULSH
EMERGENCY OVERFLOW W/ ATRIUM GRATE
SOIL MIX
PONDING DEPTH
3/4" WASHED AGGREGATE
30 MIL MIN. GEOMEMBRANE WATERPROOF LINER
6" PERFERATED PVC DRAIN PIPE IN GEO-TEXTILE SOCK WITH 0.50% MIN. SLOPE TO DRAIN

TYPICAL BACKYARD BIO-RETENTION BASIN

NOT TO SCALE

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APPENDIX “E”

City Forms

2019-02-25 Susmp R

OWNER'S CERTIFICATION

Minimum Best Management Practices (BMPs)
For **ALL** Construction Sites

FORM OC1

RANCHO PALOS VERDES

Project Name	**BUILDING / GRADING PERMIT NUMBER**
Project Location	

Owner Name _____
Address _____
Phone _____
Fax or Email _____

Contractor Name_____
Address _____
Phone _____
Fax or Email _____

The National Pollutant Discharge Elimination Systems (NPDES) is the portion of the Clean Water Act that applies to the protection of receiving waters. Under permits from the Los Angles Regional Water Quality Control Board (RWQCB), certain activities are subject to RWQCB enforcement. To meet the requirements of the Los Angeles County Municipal Storm water permit (CAS004001), minimum requirements for sediment control, erosion control and construction activities must be implemented on each project site Minimum requirements include:

- **SEDIMENT CONTROL:** Eroded sediments from areas disturbed by construction and from stockpiles of soil shall be retained on site to minimize sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.
- **WET WEATHER EROSION CONTROL PLAN (WWECP):** Is required for projects one acre or more that will have construction occur during the wet season (October 1st – April 15th)
- **HILLSIDE:** Construction upon slopes 25% or more requires the implementation of additional BMPs to protect slopes and prevent erosion and sediment runoff.
- **CONSTRUCTION MATERIALS CONTROL:** Construction related materials, wastes, spills or residues shall be retained on site to minimize transport from the site to streets, drainage facilities or adjoining properties by wind or runoff. Runoff from equipment and vehicle washing shall be contained at construction sites unless treated to remove sediment and pollutants.
- **NON-STORMWATER RUNOFF:** Non-Stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site.
- **EROSION:** Erosion from slopes and channels shall be controlled by implementing an effective combination of BMPs (as approved in Regional Board Resolution No. 99-03), such as the limiting of grading schedule during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.

Minimum BMPs include: (1) Soil piles must be covered with tarps or plastic, (2) leaking equipment must be repaired immediately, (3) refueling must be conducted away from catch basins, (4) catch basins must be protected when working nearby, (5) vacuum all concrete saw cutting, (6) never wash concrete wastes in the street, (7) keep the site clean, sweep the gutters at the end of each working day and keep a trash receptacle on site

As the architect/engineer of record, I have selected appropriate BMPs to effectively minimize the negative impacts of this project's construction activities on storm water quality. The project owner and contractor are aware that the selected BMPs shall be installed, monitored, and maintained to ensure their effectiveness. The BMPs not selected for implementation are redundant or deemed not applicable to the proposed construction activity.

_____ _____
Design Professional or Record Printed Name | Design Professional of Record Signature

_____ _____
Title | Date

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person (s) who manage the system or those person (s) directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and properly and/or adequately implement the BMPs may result in revocation of grading and/or other permits or other sanctions provided by law.

_____ _____
Property Owner Printed Name | Property Owner Signature

_____
Date

2019-02-25 Susmp Report.pdf

STORM WATER PLANNING PROGRAM

PRIORITY DEVELOPMENT & REDEVELOPMENT PROJECTS

RANCHO PALOS VERDES

FORM P1

Project Name	_____
Project Location	_____
Company Name	_____
Address	_____
Contact Name / Title	_____
Phone / FAX / Email	_____

General Project Certification

A completed original of this form must accompany all SUSMP submittals.

Best Management Practices (BMPs) have been incorporated into the design of this project to accomplish the following:

1. Minimize impacts from storm water runoff on the biological integrity of Natural Drainage Systems and water bodies in accordance with requirements under CEQA (Cal. Pub. Resources Code § 21100), CWC § 13369, CWA § 319, CWA § 402(p), CWA § 404, CZARA § 6217(g), ESA § 7, and local government ordinances.
2. Maximize the percentage of permeable surfaces to allow more percolation of storm water into the ground.
3. Minimize the amount of storm water directed to impermeable surfaces and to the MS4.
4. Minimize pollution emanating from parking lots through the use of appropriate Treatment Control BMPs and good housekeeping practices.
5. Properly design and maintain Treatment Control BMPs in a manner that does not promote breeding of vectors.
6. Provide for appropriate permanent measures to reduce storm water pollutant loads in stormwater from the development site.

I certify that this Standard Urban Storm Water Mitigation Plan and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted.

Post Construction / Maintenance Certification

As the responsible party, I certify that the BMPs will be implemented, monitored and maintained to ensure their continued effectiveness. In the event of a property transfer, the new owner will be notified of the BMPs in use at this site and must include written conditions in the sales or lease agreement, which requires the recipient to assume responsibility for maintenance and conduct a maintenance inspection at least once a year. The information contained herein is, to the best of my knowledge and belief, true, accurate, and complete.

In consideration of the execution of the City approval of the proposed Standard Urban Stormwater Mitigation Plan (SUSMP) including any proposed treatment system, the applicant hereby agrees to indemnify, save and keep the City of Rancho Palos Verdes, its officers, agents and employees free and harmless from and against any and all claims for injury, damage, loss, liability, cost and expense of any nature whatsoever, which the City of Rancho Palos Verdes, its officer, agents, or employees may suffer, sustain, incur, pay out as a result of any and all actions, suits, proceedings, claims and demands which may be brought, made, or filed against the City of Rancho Palos Verdes, its officers, agents or employees by reason of or arising out of, or in any manner connected with any and all operations permitted by this approval. This indemnification extends to further agree that the City of Rancho Palos Verdes is not responsible for any additional requirements or restrictions due to changes in regulations, policies or enforcement practices of the California Regional Water Quality Control Board, or any other applicable regulatory agencies.

Property Owner Name	Property Owner Signature
Applicant Title	Date

PLANNING BEST MANAGEMENT PRACTICES

BMP Name	BMP Identification Number and Name	✓ if to be used
Car Wash Facility	SC-21: Vehicle and Equipment Cleaning	
Constructed Wetlands	MP-20: Wetlands	
Control of Impervious Runoff	-N/A-	
Efficient Irrigation	-N/A-	
Energy Dissipaters	EC-10: Velocity Dissipation Devices	
Extended Detention Basins	TC-22: Extended Detention Basin	
Infiltration Basins	TC-11: Infiltration Basins	
Infiltration Trenches	TC-10: Infiltration Trenches	
Inlet Trash Racks	-N/A-	
Landscape Design	EC-2: Preservation of Existing Vegetation EC-4: Hydro seeding EC-6 & EC-8: Straw & Wood Mulching	
Linings for Urban Runoff Conveyance Channels	-N/A-	
Materials Management	SC-30: Outdoor Loading/Unloading	
Media Filtration	TC-40: Media Filter	
Motor Fuel Concrete Dispensing Areas	SC-20: Vehicle and Equipment Fueling	
Motor Fuel Dispensing Area Canopy	SC-20: Vehicle and Equipment Fueling	
Water Quality Inlets	TC-50: Water Quality Inlet	
Outdoor Storage	SC-31: Outdoor Liquid Container Storage SC-33: Outdoor Storage of Raw Materials	
Porous Pavement and/or Alternative Surfaces	-N/A-	
Protect Slopes and Channels	EC-11: Slope Drains EC-12: Streambank Stabilization	
Self-Contained Areas for Vehicle or Equipment Washing, Steam Cleaning, Maintenance, Repair, or Material Processing	SC-21: Vehicle and Equipment Cleaning SC-22: Vehicle and Equipment Repair SC-32: Outdoor Equipment Operations	
Storm Drain System Stenciling and Signage	SC-34: Waste Handling and Disposal (Signage Section)	
Trash Container Areas	SC-34: Waste Handling and Disposal	
Vegetated Swales and Strips	TC-32: Bioretention	
Wet Ponds	TC-20: Wet Ponds	
Other:	• • • • •	

Please refer to the California Storm Water Best Management Practice Handbooks for more information.

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RANCHO PALOS VERDES

STORM WATER PLANNING PROGRAM PRIORITY PROJECT CHECKLIST

FORM PC

Project Name	Owner Name	Developer Name
Project Address	Owner Address	Developer Address
Check/Track Number	Owner Phone	Developer Phone

Part 1 – Type of Project

Does the proposed project fall into one of the following categories?	YES	NO
1. A new development of 10 or more unit homes, including single and multiple family homes, condominiums, apartments, etc.		
2. A new industrial or commercial development with 1 acre or more of impervious surface.		
3. A new automotive service facility.		
4. A new retail gasoline outlet.		
5. A new restaurant.		
6. A new parking lot with either 5,000 ft^2 of impervious surface or with 25 or more parking spaces.		
7. A new hillside project (1 acre or more of surface area).		
8. Redevelopment projects*		
9. Project located in, adjacent to or discharging directly to an ESA* AND creates 2,500 ft^2 or more of impervious surface area.		

If checked YES, numerical criteria will apply to items 1,2,6-9 and items 3-5 with project areas of 5,000 ft^2 or more of surface area. If any of the boxes in Part 1 are checked YES, this project will require the preparation of a Standard Urban Stormwater Mitigation Plan.
* Defined on back.

Part 2 – Project Specific Concerns

Does the proposed project include any of the following elements?	YES	NO
1. Vehicle or equipment fueling areas (retail or private)		
2. Vehicle or equipment maintenance areas, including repair or washing		
3. Commercial or industrial waste handling or storage		
4. Outdoor handling or storage of hazardous materials		
5. Outdoor manufacturing areas		
6. Outdoor food handling or processing		
7. Outdoor animal care, confinement, or slaughter		
8. Outdoor horticulture activities		

If any of the boxes in Part 2 are checked YES, this project will require the preparation of a Site Specific Stormwater Mitigation Plan. If boxes in Parts 1 and 2 are both checked YES, a combined Standard Urban Stormwater Mitigation Plan will need to be submitted.

Applicant Name _____ Applicant Signature _____

Applicant Title _____ Date _____

cc: one copy of documents to Public Works

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DEFINITIONS:

Pervious surfaces are those that allow storm water runoff to percolate through. Typical pervious surfaces include: grass, gravel, concrete pavers, and some specially designed asphalts.

Hillside means property where the slope is 25% or greater and where grading contemplates cut or fill slopes.

Redevelopment means land-disturbing activity that result in the creation, addition, or replacement of 5,000 ft^2 or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to:

- The expansion of a building footprint;
- Addition or replacement of a structure;
- Replacement of impervious surface area that is not part of a routine maintenance activity; and
- Land disturbing activities related to structural or impervious surfaces

It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include modifications to existing single family structures, or emergency construction activities required to immediately protect public health and safety.

Environmentally Sensitive Areas (ESAs) means an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and would be disturbed or degraded by human activities and developments. Also, an area designated by the City as approved by the Regional Water Quality Control Board.

Maintenance Agreement and Transfer: All developments subject to SUSMP and site specific plan requirements provide verification of maintenance provisions for Structural and Treatment Control BMPs, including but not limited to legal agreements, covenants, CEQA mitigation requirements, and/or conditional use permits. Verification at a minimum shall include:

- The developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either
- A signed statement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance and conduct a maintenance inspection at least once a year; or
- Written conditions in the sales or lease agreement, which requires the recipient to assume responsibility for maintenance and conduct a maintenance inspection at least once a year; or
- Written text in project conditions, covenants and restrictions (CCRs) for residential properties assigning maintenance responsibilities to the Home Owners Association for maintenance of the Structural and Treatment Control BMPs; or
- Any other legally enforceable agreement that assigns responsibility for the maintenance of post-construction Structural or Treatment Control BMPs.

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APPENDIX “F”

Master Covenant and Agreement MCA

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Recording requested by and mail to:

Name: EXAMPLE ONLY

Address: EXAMPLE ONLY

********** Space Above This Line For Recorder's Use **********

MASTER COVENANT AND AGREEMENT

REGARDING ON-SITE BMP MAINTENANCE

The undersigned hereby certifies I am (we are) the owner(s) of the hereinafter legally described real property located in the City , County of Los Angeles, State of California (please give legal description: assessor's ID, tract no, lot not, etc.):

_____

Site Address _____

I (we) do hereby covenant and agree to and with the City to maintain according to the O&M Plan (attachment 1), all on-site structural stormwater pollution removal devices including but not limited to: Detention/Sedimentation System, Filtration Systems, Infiltration Systems, Oil and Water Separators, Water Quality Inlets and Dry Wells. The specific structural BMPs are listed as follows:

_____

_____

That owner(s) shall maintain the listed drainage devices above on the property indicated and as shown on plans permitted by the City of in a good and functional condition to safeguard the property owners and adjoining properties from damage and pollution.

That owner(s) shall provide printed educational materials with any sale of the property which provide information on what stormwater management facilities are present, the type(s) and location(s) of maintenance signs that are required, and how the necessary maintenance can be performed.

This covenant and agreement shall run with the land and shall be binding upon any future owners, encumbrances, their successors, heirs or assigns and shall continue in effect until the Engineering Division of the City of approves its termination.

_____ _____

(Print Name of Property Owner) (Print Name of Property Owner)

_____ _____

(Signature of Property Owner) (Signature of Property Owner)

Dated this _____ day of _____ 20 _____.

********** Space Below This Line For Notary's Use **********

ALL PURPOSE ACKNOWLEDGEMENT

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES

On _____ before me, _____ (name and title of officer), personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (SEAL)

Notary Public Signature

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- Other definitions can be found on the MS4 NPDES Permit -
http://www.swrcb.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/